BOWLING BALL WITH CHANGEABLE WEIGHT AND GRIP

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The present invention relates to a composite bowling ball embodying the ball proper having a cavity or socket for reception and retention of a readily attachable and detachable complementary part having finger holes and constituting a grip and which, when detached from the ball proper, can be replaced by another grip provided with finger holes or cores differing in size from the first named holes.

Briefly the ready-to-use bowling ball is characterized by the ball proper having a radial cavity constituting a socket, and an insertable and removable filler or plug fitted and reliably retained in said socket. The plug has a precision finished convexed alley contacting surface which is conformable with the contiguous convex surface of the ball proper. Means of one type or another is provided for removably but securely positioning and retaining the plug in its grip-serving place in the stated cavity or socket.

Persons conversant with the art to which the invention relates are aware that it is not new to provide a cavity or recess in a bowling ball and fit and anchor therein a suitably contoured insert or plug, the latter provided with bores sized and positioned to accommodate the individual grip requirements of bowlers (male and female). It follows that one object of the instant matter is to add to the art, and in so doing, to provide a composite or two-part bowling ball wherein the mating parts are such in construction and design that they provide a bowling ball with a selectively usable grip which not only meets the needs of bowlers but the manufacturing requirements of manufacturers.

Another objective is to pave the way for practical changes in bowling alley practices and procedures in a well directed and acceptable manner. For example, with the herein disclosed composite-type ball the bowler will need only to buy a made-to-order plug of predetermined weight and otherwise in keeping with his particular finger hole and other requirements. The bowling alley proprietor will need to have only such number of plug-accommodating balls on hand as will comply with minimum storing and use requirements. The bowler merely brings with him a plug he likes. Inasmuch as the improved plugs and balls are precision made and are interchangeable and properly made the attending advantages and improved results are evident. If a bowler buys a plug for himself and has it drilled to fit he is confronted with carrying merely a grip or plug of approximately three to five pounds in carrying a six pound ball around with him. Manifestly this accomplishment alone should appeal to many bowlers particularly female bowlers.

It is thought to be advantageous in promoting the adoption and use of the herein disclosed ball in that it will enable the ardent bowler to purchase and keep as many personal grips or plugs as are thought to be necessary. It is generally well recognized that virtually all bowlers as they approach the alley on which the bowling is to be carried out, they necessarily study it, get the desired "feel" relative to the lanes of the alley, and then predetermine stance and techniques in respect to an intended straight ball, hook, or curve. Instead of wasting frames in a strenuous effort to adjust to the decided approach, with the plug-equipped ball herein under advisement and with all balls standardized and the inter-changeable plugs appropriately mated, best possible results are attainable. Consequently, the bowler, having established a good frame of mind and using a properly plugged ball feels at home on almost any alley in respect to approach and delivery steps.

It is also a matter of significance that the simple insertable and removable plug or grip will prove out to be significantly economical. Therefore, more bowlers will be able to buy and use it. It is comparatively small and hence requires less storage space and will be convenient to carry and otherwise handle.

Reference will now be made to another aspect of the concept; namely, that the maximum over-all weight of a regular bowling ball (American Bowling Congress Standards and Specifications) is sixteen pounds. However, and as will be hereinafter clarified, the improved composite ball makes it possible to offer bowlers a ball which is unique in that the weight thereof can be varied. Consequently, the bowler can assemble the several components which go to make up the ready-to-use ball and thus have at his disposal a ball which weighs, let us say, between eight and sixteen pounds.

In carrying out the above phase of the concept the ball proper is provided, in addition to the socket or recess, with an ancillary semi-spherical socket located at the axial center and provided with a spherical or ball-shaped weight. The mass of this weight can be from a fraction of a pound to seven or eight pounds depending on experimental needs and requirements. By fitting the weight on a stud provided therefor and clamping it in place by the plug or grip the changeable weight feature is achieved.

These together with other objects and advantages which will become subsequently apparent reside in the detail of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is an exploded perspective view showing the improved composite bowling ball with changeable weight and oriented weight retaining grip.

FIGURE 2 is a view partly in elevation but essentially in section which shows the several principal component parts assembled and ready for use; and

FIGURE 3 is a top plan view of the ball proper but on a slightly reduced scale (compared to FIGURE 2) with the plug removed.

With reference now to FIGS. 1—3, inclusive, the ball proper is denoted by the numeral 70, the same having the required convex exterior surface 72. The upper or top half portion of the ball is recessed to provide a cavity 74 having an endless annular or beveled surface 76, said surface adapted to accommodate the endless bevel 78 on the bottom or connectible side of the attachable and removable plug or grip 80. The convex surface of the plug 80 is denoted at 82 and the bores are illustrated at 84. It will be noticed too that at the bottom of the bevel 78 there is an endless ring-like centering and stabilizing collar 86.

With reference now to FIGURE 2 in particular it will be noted that the central axial portion of the ball 70 is provided with a substantially semi-spherical socket or pocket 88. This is referred to as an ancillary or auxiliary socket in that it is actually a component part of the main socket 74. It is of a size to accommodate any approximate one-half portion of a spherical readily applicable and removable weight 90. The latter having a bore 92 extending therethrough from top to bottom as shown in the several figures. There is an annular ledge at 94 and a functional shoulder at 96. Thus, the ball 70 is provided with a main cavity or recess 74, a complementary ancillary semi-spherical socket 88, an interven-
ing ledge 94 and an upstanding junctional shoulder 96. Embedded at the central bottom portion of the socket 88 is an accessible anchoring nut 98 into which the lower<br>complemental end 100 of the weight orienting, coordinat-<br>ing and retaining stud 102 is screwed or otherwise an-<br>chored. The upper end of this stud is adapted to be<br>inserted into a similarly arranged embedded nut 104 in<br>the central portion of the semi-spherical recess or socket<br>106 in the underneath central side of the spherical, con-<br>ical segment or grip 80 as brought out in FIGURE 2. It<br>should be noted that the collar 86 cooperates with the<br>sloping surface 78 and the semi-spherical recess 106 so<br>that it seats the collar 86 on the ledge 94 with the outer<br>periphery of the collar abutting the shoulder 96. The<br>studs 102 is of a length to have its ends threaded into the<br>nuts 98 and 104 and also to extend completely through<br>and beyond the end portions of the axial bore 92 in the<br>spherical weight 90. The ball proper is also called the base, and the part (attachable and detachable top part) constitutes the grip. These recessed balls can be stocked in any number de-<br>sired because there should be no likelihood or fear of<br>over-stocking on light, medium or heavy balls. The<br>weights or plugs can also be stocked in the weight range<br>herein revealed. To fill an order all that the maker has<br>to do is to take any grip and base plus the weight de-<br>sired, assemble and ship, thus giving the purchaser a<br>ball that he can handle. It is desired to emphasize here<br>the idea of a composite bowling ball characterized by<br>three basic parts which should appeal to manufacturers<br>of conventional-type bowling balls. With the disclosed<br>construction the manufacturer can first make the grip, the<br>ball proper (or base) and not have to worry about how<br>many balls at a certain weight would have to be stocked.<br>Then, all the manufacturer would have to do is to pro-<br>vide the center with weight media. This component, the<br>weight or weight media, would have a varied range.<br>For example, suppose a manufacturer gets an order for<br>balls that are to vary in weight. If the order calls for<br>two 10 pound balls and three 12 pound balls all the man-<br>ufacturer would have to do is to use a total of five bases<br>and five applicable and removable grips which are inter-<br>changeable, two two-pound weights and three four-pound<br>weights and upon assembling these the order would then<br>be complete. In addition, it is to be remembered that the<br>construction disclosed is such that the component parts can be fastened together in the manner illustrated or joined and effectively united in any acceptably practical manner.<br>It is believed that a careful consideration of the specifi-<br>cation in conjunction with the views of the drawing will enable the reader to obtain a clear and comprehensive understanding of the subject matter of the invention and the features and advantages which are assured.<br>The foregoing is considered as illustrative only of the<br>principles of the invention. Further, since numerous<br>modifications and changes will readily occur to those<br>skilled in the art, it is not desired to limit the invention to<br>the exact construction and operation shown and de-<br>scribed, and accordingly all suitable modifications and<br>equivalents may be resorted to, falling within the scope<br>of the invention as claimed.<br>What is claimed as new is as follows:<br>1. A composite bowling ball comprising a body sec-<br>tion constituting the ball proper and embodying a solid<br>one-piece bottom portion and a complemental top por-<br>tion, the top part of said bottom portion being provided<br>at its axial center with an upwardly opening semipherical<br>socket, a spherical weight having a lower semipherical<br>half-portion fitting conformingly into and wholly filling<br>said socket and an upper semipherical half-portion pro-<br>jecting to a plane above the top of the socket, that portion<br>of said body portion encircling the upper half-portion of<br>said weight being provided with a conical cavity, a one-<br>piece solid spherical-conic segment constituting a sym-<br>formingly fitted in and wholly filling said cavity and hav-<br>ing-metrical grip portion and having a conical bottom con-<br>ing direct engagement with the cooperating surfaces of<br>said cavity, said conical bottom being provided with a<br>semipherical socket cooperatively oriented with said first-<br>named socket and conformingly containing and retaining<br>the upper semipherical half-portion of said weight, said<br>grip portion having an outer convex surface matching<br>and complemental to the cooperating convex surface<br>portions of said body portion, and means removably<br>securing said grip portion to said spherical weight and<br>also to said portion and clampingly joining all of the<br>mixed surfaces securely together. 2. The structure defined in claim 1 and wherein the aforementioned securing means embodies aligned diame-<br>trically opposite screw-threaded members projecting<br>beyond the respective peripheral surface portions of said<br>spherical weight, said body portion and said grip portion<br>being provided with azimuthally aligned screw-threaded sockets and the respective screw-threaded members being screwed into their respectively cooperative sockets. 3. A bowling ball comprising a main ball section em-<br>bodying a body portion of one-piece solid form provided<br>with a central axially positioned semipherical socket, the<br>latter provided at the center of the bottom thereof with<br>a fixedly anchored upstanding screw-threaded stud in<br>line with the vertical central axis of said body portion,<br>the upper part of said body portion having an upwardly<br>opening conical cavity, the central bottom portion of<br>said cavity communicating with said socket, a spherical<br>ball weight having a bore extending axially therethrough,<br>the lower half-portion of said weight conformingly fitting<br>into and wholly filling said socket, said stud extending<br>through said bore and centrally beyond a peripheral sur-<br>face of said weight, and a complemental companion grip<br>section having an outer exterior convex surface contiguous<br>with and cooperatively matching the convex surface por-<br>tions of said body portion and having a conical bottom<br>surface fitting into and wholly filling said cavity, all coop-<br>erating surfaces being firmly in contact, and said grip section<br>being further provided at its center with a semipherical<br>socket aligned with the first-named socket and encompass-<br>ing and fittingly receiving the upper half-portion of said<br>weight and further provided with a screw-threaded auxil-<br>iary socket into which the adjacent projecting upper end of<br>said stud is screwed and anchored in place.