Aug. 7, 1934. H. E. McKENZIE 1,969,378

BOWLING PIN

Filed June 30, 1930 2 Sheets-Sheet 1

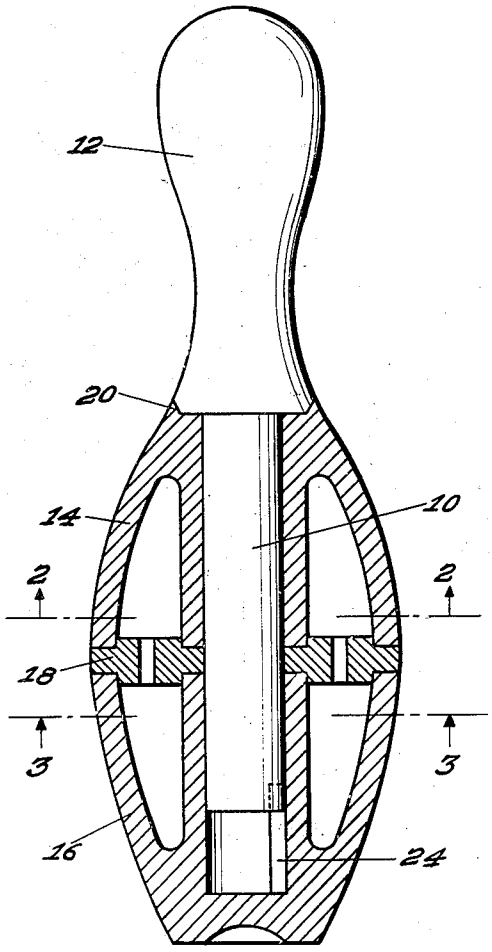



FIG. 1

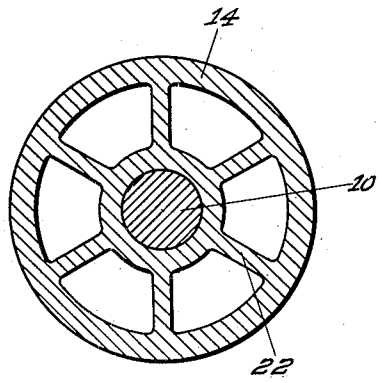



FIG. 2

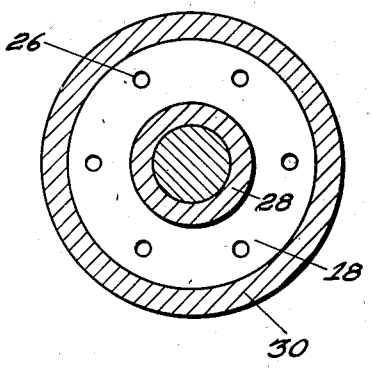



FIG. 3

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BOWLING PIN

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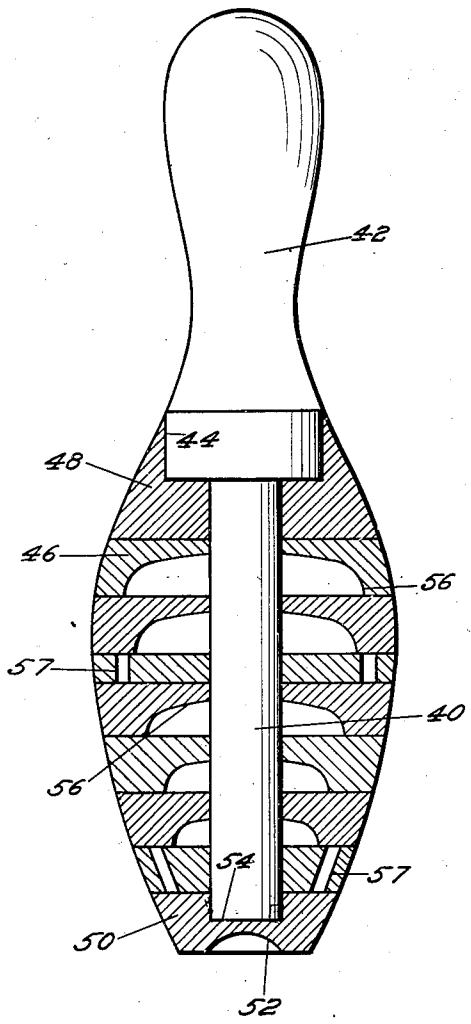



FIG. 4

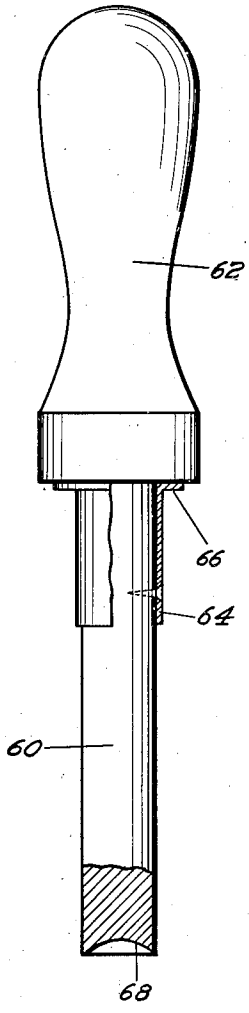



FIG. 5

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# UNITED STATES PATENT OFFICE

1,969,378

## BOWLING PIN

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Application June 30, 1930, Serial No. 464,881

6 Claims. (Cl. 273—82)

This invention relates to an improved bowling pin and has for one of its principal objects the provision of a bowling pin, ten pin, or the like, which shall combine all the advantages of a solid wooden pin while at the same time eliminating the objections which have heretofore been met with in the manufacture and use of such wooden pins.

One of the important objects of this invention is the provision of a composite bowling pin or the like which is made up of a plurality of parts, preferably a core, a head, and neck of wood, whereby the desired "click" of the ball against the pins in action is retained, while at the same time the expense of production of a solid wooden pin and the difficulties of manufacture thereof are considerably lessened.

Another important object of this invention is the provision, in a composite bowling pin or the like, of replaceable parts of some material other than wood which will combine or exceed the advantages of wood so far as resiliency and resistance to wear are concerned, while at the same time retaining the necessary weight per pin and also making suitable provision for the retention of the center of gravity of the pin in the same point as it is found in the wooden pins.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawings and following specification.

The invention, in a preferred form, is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a vertical elevation, partly in section, of the improved composite bowling pin of this invention.

Figure 2 is a horizontal sectional view on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 illustrates a modification of the invention.

Figure 5 shows a still further modification.

As shown in the drawings:

The reference numeral 10 indicates, generally, a core for the pin, which core is preferably of a suitable wood or the like, and which has, integral therewith or attached thereto, a head and neck 12, also preferably of the same material, such as hard maple or some similar wood. The dimensions of the combination core, head and neck are such that a considerably larger number of these parts may be obtained from a log or block of the wood than would be possible if solid pins were made therefrom, while at the same time the desirable ring or click of the pins in action is retained.

The core 10 may extend to the bottom of the pin if desired, or the same may be shortened as illustrated in the figure and the required length be built up from the composition material applied to the core.

This composition is preferably in three pieces, as indicated at 14, 16, and 18 in Figure 1, the member 14 comprising the upper part of the body of the pin and having an inner cylindrical portion adapted to closely fit about the shank of the core 10, and is preferably glued or otherwise attached thereto in a desired or suitable manner.

It will be noted that an annular upwardly extending shoulder 20 is provided at the upper end of the member 14, and the corresponding lower end of the neck 12 is cut away so as to fit snugly into this shoulder, this construction avoiding the possibility of breakage at this point.

In order to afford the necessary lightness, while at the same time retaining the desired strength, a plurality of radially extending webs 22 is provided in the member 14, these webs being best illustrated in Figure 2. The number and size of these webs may be varied as desired so as to produce a necessary result, and the material of the elements 14, 16, and 18 may be of any of a number of suitable compositions now on the market, such as a phenol condensation product, fiber, celluloid, or some cellulose composition, or may be composed of some fibrous or textile material such as strawboard, canvas, or the like, impregnated with a suitable composition which will afford the necessary strength and resiliency.

The lower element 16 is preferably shaped as shown in Figure 1 but may have a cylindrical opening throughout its length allowing the core 10 to extend therethrough to the bottom thereof. Suitable air spaces are provided in the member 16 by means of webs or the like, similar to those illustrated in Figure 2. This member is likewise glued or otherwise fastened to the core, and, if desired, may be keyed thereon by means of a wedge or the like 24.

There is preferably provided between the members 14 and 16 a horizontally extending disk 18 shaped to correspond to the outlines of the elements 14 and 16, this being provided to permit of greater resistance to the bowling ball at the point of impact; and a suitable number of openings 26, which may be of any desired size and

shape, are provided in the disk 18 to furnish the necessary lightness and also to provide suitable resiliency. These openings also allow of transfer of air from the air spaces in the element 14 to those in the element 16 thereby providing increased resilient action. Further, a suitable spacing of the openings 26 in the disk 18 can properly position the center of gravity of the bin.

As illustrated, the inner and outer peripheries of the disk 18 are provided with shoulders 28 and 30, respectively, whereby a more accurate fitting to corresponding portions of the members 14 and 16 may be provided; but this feature may be eliminated if desired without affecting the qualities of the pin in any way.

A modification of the invention is illustrated in Figure 4, wherein a core 40 is either built onto or formed integral with the head and neck 42, the combination being provided with a squared shoulder 44 at their point of junction, and about this core is built up a body comprising a plurality of layers of fiber or some similar material, as shown in 46. The upper layer 48 is shaped to correspond to the junction or shoulder 44, whereby breakage at this point is minimized, and the bottom element 50 may present a continuous under-surface having a slight recess 52 therein for spotting or the like, and a socket 54 in its upper face for the reception of the lower end of the core 40. These layers of fiber may be cut away or recessed at suitable points, as shown at 56, and may be drilled, as shown at 57, to provide lightness and also air spaces for resiliency. These recesses may be so arranged, both with respect to size and position, that the center of gravity of the pin will be retained at the desired or necessary point.

In Figure 5 is illustrated still a further modification of a combined core 60 and head and neck 62, wherein a junction of these parts is further strengthened by the use of a metallic sleeve 64 which can be fitted around the upper end of the neck 60, and which may further cooperate with a suitable metallic washer or the like 66 which fits snugly against the lower end of the neck, thereby reinforcing the same. In this figure the core 60 is shown as extending completely throughout the length of the pin and with a recess 60 provided in its bottom for spotting or setting purposes, as in the usual construction.

It will be evident that herein is provided a composite pin for bowling or the like which will meet all the requirements of the solid wooden pins heretofore considered necessary, while at the same time afford a cheaper and more durable construction and one which is composed of replaceable or renewable parts, thereby rendering the same susceptible of repairing after damage through length of service, while at the same time retaining the original head, neck and core which provide the desirable playing qualities.

I am aware that many changes may be made and numerous details in construction varied throughout a wide range, without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

I claim as my invention:

1. A composite bowling pin, including a head, neck, and core of wood, with a shoulder at the junction of the core and neck, and reinforcing means for said junction, said reinforcing means comprising a metallic sleeve and washer, and a body of fibrous material built up on the core, said body having air cavities therein.

2. A bowling pin construction comprising the combination of an axially disposed wooden spindle having a portion shaped to form the pin head and neck, composition shell members each encompassing and secured to the spindle below the neck and having their external surfaces shaped to form the desired surface contour of the pin body, and a girth ring secured to the spindle and adjacent shell members and forming an interior support for the latter.

3. A bowling pin construction comprising the combination of an axially disposed wooden spindle having a portion shaped to form the pin head and neck, a plurality of hollow annular bakelite shell members strung coaxially on said spindle and secured thereto, and a rigid girth ring encompassing and secured to the spindle and secured to and affording the adjacent shell members marginal support radially of the pin, said shell members being shaped externally to form the desired contour of the pin body.

4. A bowling pin construction comprising the combination of an axially arranged wooden spindle having an end portion shaped to form the pin head and neck, a plurality of cup-shaped hollow shell members mounted coaxially on the spindle below the neck and having contact with the spindle circumferentially thereof and having their exterior surfaces shaped to form the desired contour of the pin body, and a girth ring encircling the spindle and having bearing on the periphery thereof and affording the adjacent shell members support radially thereof.

5. A bowling pin construction as specified in claim 4 and wherein the girth ring has a peripheral portion extending between the margins of adjacent shell members and shaped exteriorly to form a portion of the pin body surface.

6. A bowling pin construction comprising an axially disposed wooden spindle extending substantially the entire height of the pin and having its upper portion shaped to form the pin head and neck, hollow annular shell members mounted coaxially on the spindle, and a girth ring mounted on the spindle and having portions supporting the adjacent shell members in coaxial position and portions extending between and abutting the margins of adjacent shell members, the external peripheral surfaces of said shell members and girth ring being shaped to form the desired surface contour of the pin body.

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