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BOWLING PINS

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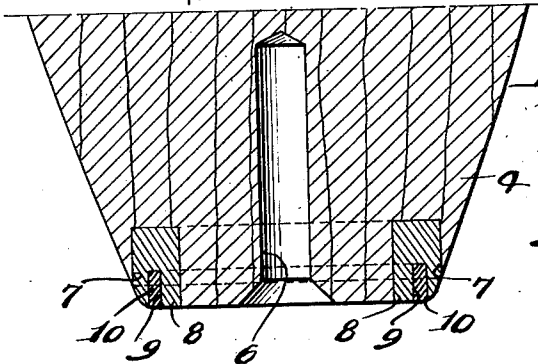
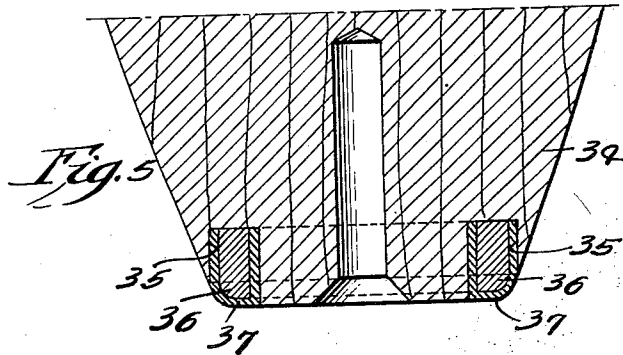
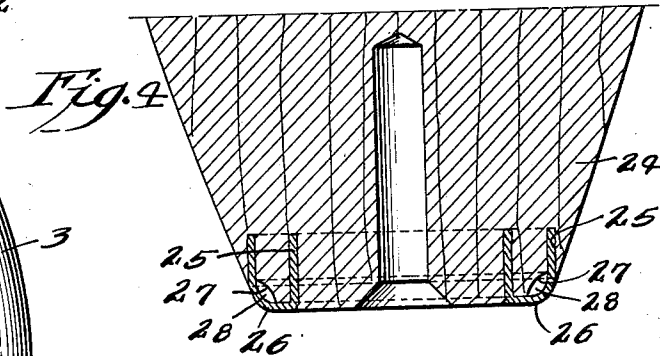
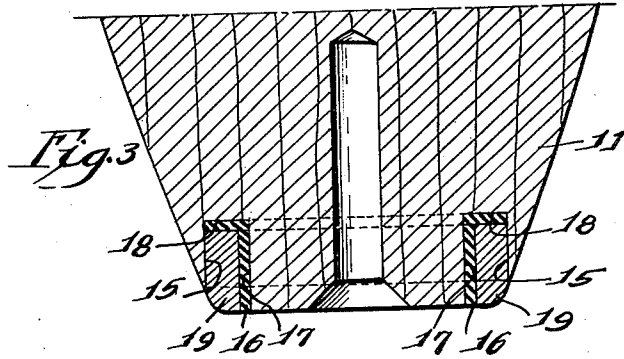
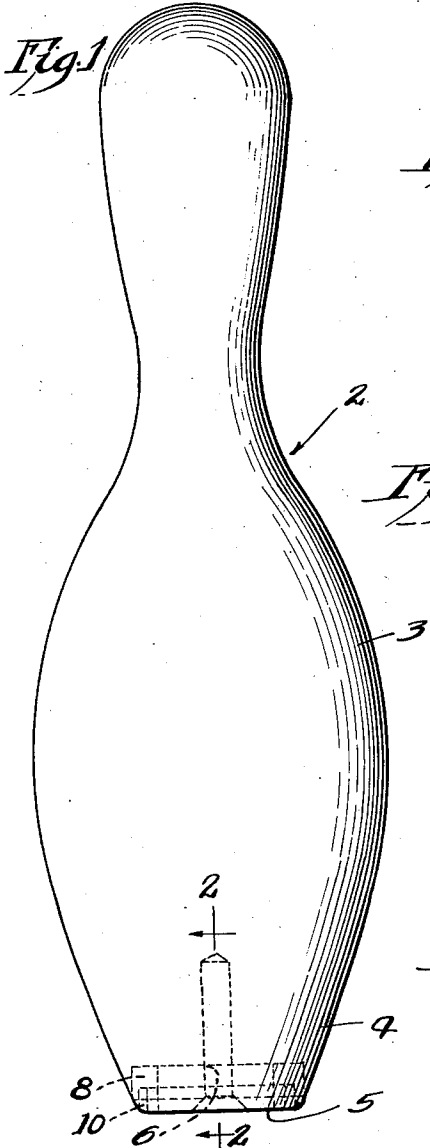


Fig. 2 Inventors
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2,809,038

BOWLING PINS

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2 Claims. (Cl. 273—82)

This invention relates to bowling pins and has for a general object the provision of new and improved bowling pins providing prolonged pin life and having desirable scorbility characteristics.

Bowling pins in use incur considerable damage in colliding with the relatively sharp bottom corners of other pins, and the development of ideal pin bottoms has always revolved about the conflicting requirements of a soft material for pin protection and a smooth material which will permit the pins to slide freely for good scores. Unfortunately, the coefficient of friction is almost a direct function of hardness and great difficulty has been encountered in finding a single homogeneous material which will satisfy both requirements.

It is an object of the present invention to provide a new and improved bowling pin having at the bottom a relatively hard, smooth surface which engages the surface of the alley, and a relatively soft medium for cushioning the hard material on impact with other pins.

A more specific object is to provide a new and improved bowling pin having a ring of relatively hard, smooth material in the bottom surface at the periphery, adapted to engage the surface of an alley when the pin is in use to permit the pin to slide freely, and cushioning means to soften the impact of the hard material on contact with other pins.

Another object is to provide a new and improved bowling pin having an annular peripheral groove in the bottom surface, an inner annular insert of relatively soft cushioning material provided in the groove, and an outer annular insert of relatively hard, smooth material in the groove, cushioned by the soft material, and adapted to engage the surface of an alley when the pin is in use to permit the pin to slide freely.

Other objects and advantages will become readily apparent from the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a side view of a bowling pin embodying one form of our invention;

Fig. 2 is an enlarged fragmentary sectional view taken on the line 2—2 of Fig. 1; and

Figs. 3, 4 and 5 are views similar to Fig. 2, illustrating other embodiments of our invention.

The invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while we have shown preferred embodiments therein, we wish it understood that they are susceptible of modification and change within the scope of the appended claims.

Referring now to Fig. 1, the invention is illustrated in connection with a bowling pin 2 of standard overall size and shape. The pin comprises a main body 3 having a base portion 4 provided with a flat circular bottom surface 5, adapted to rest on the surface of a bowling alley to support the pin in an upright position. A central bore 6 is provided in the base of the main body for use in spotting the pin correctly on the alley.

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Referring to Fig. 2, in one embodiment of the invention, a channel-shaped groove 7 is provided in the base portion 4 at the periphery of the bottom surface, extending around the circumference of the bottom of the pin.

Within the groove 7 there is fitted an annular insert 8 of relatively soft, resilient, cushioning material which may be molded with a central annular groove 9. Within the groove 9 there is provided an insert 10 of relatively hard, smooth material.

The insert 10 may project beyond the bottom surface of the insert 8 by a slight distance, for example, about .020", and engages the alley when the pin is upright, or generally upright, to permit the pin to slide freely so that good scores may be attained in bowling. The soft insert 8 forms a cushion to soften the impact of the hard material 10 when the relatively sharp corner of the pin collides with other pins, thus protecting other pins against undue damage.

The relatively soft insert 8 consists of a resilient material having a durometer hardness less than 85, such as, for example, a vinyl chloride-acetate composition of suitable hardness. The insert 8 is retained in the groove 7 by an adhesive. The relatively hard insert 10 consists of a suitable material having a durometer hardness over 95, such as, for example, a nylon composition having the necessary hardness. The insert 10 may be retained in the groove 9 by an adhesive or the groove may be undercut and the insert provided with a lip to retain it in the groove.

Referring to Fig. 3, in another embodiment of the invention, the base portion 11 of a similar bowling pin is provided with a channel-shaped groove 15 extending around the periphery of the bottom surface of the pin. An insert 16 of relatively soft, resilient cushioning material lines the inner wall 17 and the bottom wall 18 of the groove. An insert 19 of relatively hard, smooth material is seated in the groove against the soft insert 16. The hard material 19 may project slightly beyond the bottom surface of the adjacent soft material 16 and engages the surface of the alley to permit the pin to slide freely, while the soft material 16 cushions the impact of the hard material on colliding with other pins.

The soft insert 16 comprises a resilient material having a durometer hardness of about 50. For example, it has been found that a rubber composition having the desired hardness is satisfactory, and this is illustrated. The relatively hard insert 19 comprises a suitable material having a durometer hardness over 95, such as, for example, a cellulose acetate-butyrate ester composition of suitable hardness. The two inserts are retained in the groove 15 by suitable adhesive means.

In the modification of Fig. 4, the base portion 24 of a similar bowling pin is provided with a groove 25 of generally U-shaped cross section extending around the periphery of the bottom of the pin. An annular insert 26 of relatively hard smooth material having a substantially U-shaped cross section is fitted in the groove. Near the lower outer portion, the groove 25 is recessed as at 27, the recessed portion extending around the base portion of the pin for the complete length of the groove and forming with the insert, an annular air pocket 28. The insert 26 may project slightly beyond the adjacent bottom surface of the pin and engages the surface of the alley to permit the pin to slide freely, while the air pocket 28 provides a cushion to soften the impact of the hard material on contact with other pins.

The hard insert 26 may consist of a nylon composition such as that suggested in forming the hard insert 10 in the modification of Fig. 2, retained in the groove by a suitable adhesive.

In the embodiment of the invention illustrated in Fig. 5,

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the base portion 34 of a similar bowling pin is provided with a channel-shaped groove 35 extending around the periphery of the bottom surface of the pin. Centrally within the groove 35 there is provided an annular insert 36 of relatively soft material. An annular insert 37 of relatively hard, smooth material, having a substantially U-shaped cross section, is fitted in the groove, embracing the soft material 36. The relatively hard material 37 may project slightly beyond the adjacent bottom surface of the pin and engages the alley to permit the pin to slide freely, while the soft material 36 cushions the impact of the hard material on colliding with other pins.

The soft insert 36 consists of a suitable composition such as the vinyl chloride-acetate suggested in forming the soft insert 8 in the modification of Fig. 2. The hard insert 37 comprises a suitable material such as the nylon composition suggested in making the hard insert 10 in the modification of Fig. 2. The inserts 36 and 37 are retained in the groove 35 by suitable adhesive means.

We claim:

1. A bowling pin, comprising, in combination, an elongated main body including a base portion having an outer annular side surface and a bottom surface adapted to rest on the surface of a bowling alley to support the main body in an upright position, said base portion having an annular, downwardly facing groove formed therein about the periphery of the bottom surface at the juncture of the bottom surface and the side surface, a ring of relatively soft cushioning material substantially filling the groove and including portions forming a continuation of the bottom surface and a continuation of the side surface of the base portion, said ring having an annular, centrally disposed, downwardly facing groove about the periphery of the bottom surface of the ring at the juncture of the bottom and side surfaces of the ring, and a second ring, of relatively hard, smooth material, filling the groove in said first recited ring and including portions forming a continuation of the bottom surface of the first ring and a continuation of the side surface of the first ring and meeting so that the relatively hard, smooth material forms

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an annular base juncture of bottom and side surfaces and includes a portion of both, whereby the pin will slide freely on the alley in either a vertical position or in positions slightly inclined from the vertical, said ring of relatively soft material functioning to cushion the relatively hard material on impact thereof, with other pins to minimize the impact delivering capacity of the base juncture and thereby avoid damage to other pins.

2. A bowling pin, comprising, in combination, an elongated main body including a base portion having an outer annular side surface and a bottom surface adapted to rest on the surface of a bowling alley to support the main body in an upright position, said base portion having an annular, downwardly facing groove formed therein about the periphery of the bottom surface at the juncture of the bottom surface and the side surface, a ring of relatively soft cushioning material substantially filling the groove and including portions forming a continuation of the bottom surface and a continuation of the side surface of the base portion, and a second ring, of relatively hard, smooth material, embedded in said first recited ring and including portions forming a continuation of the bottom surface of the first ring and a continuation of the side surface of the first ring and meeting so that the relatively hard, smooth material forms an annular base juncture of bottom and side surfaces and includes a portion of both, whereby the pin will slide freely on the alley in either a vertical position or in positions slightly inclined from the vertical, said ring of relatively soft material functioning to cushion the relatively hard material on impact thereof, with other pins to minimize the impact delivering capacity of the base juncture and thereby avoid damage to other pins.

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