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PLASTIC BOWLING PIN
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FIG. 1

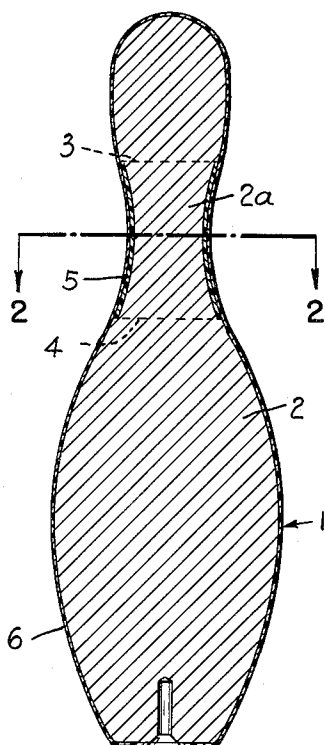
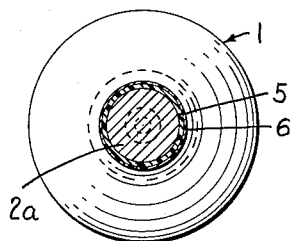


FIG. 2



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PLASTIC BOWLING PIN

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This invention relates to bowling pins and more particularly to an improved bowling pin construction characterized by increased durability.

In use, bowling pins are repeatedly subjected to relatively great shocks and prior-art workers have given much attention to strengthening bowling pin constructions to increase pin life. In connection with pins made of maple and like woods, bowling pin manufacturers have employed specially selected and treated woods and have adopted various types of re-enforcing arrangements. In more recent years, manufacturers of bowling pins have employed synthetic resin materials in place of wood, and have devised special composite constructions in which the resin materials are re-enforced by fabric and the like. Despite such effort by prior-art workers, there still remains a distinct need for improved pin constructions giving longer pin life than is now provided.

A general object of the present invention is to devise an improved bowling pin construction capable of better withstanding the great impacts encountered in normal use.

Another object is to provide a bowling pin characterized by a longer useful life than has heretofore been achieved.

A further object is to provide a more serviceable bowling pin molded from synthetic resin materials.

In general, the invention is based upon the observation that most bowling pin failures under impact occur in the region of the neck of the pin and the discovery that, particularly in the case of pins made from synthetic resin materials, such failures most frequently occur after the surface of the neck of the pin has been notched, nicked or otherwise sharply scarred by impact with a sharp object.

In order that the manner in which the foregoing and other objects are achieved in accordance with the invention can be understood in detail, reference is had to the accompanying drawings, which form a part of this specification, and wherein:

FIGURE 1 is a vertical sectional view of a bowling pin in accordance with one embodiment of the invention, and

FIGURE 2 is a transverse sectional view taken on line 2-2, FIGURE 1.

Referring now to the drawings in detail, it will be seen that this embodiment of the invention provides a bowling pin 1, of conventional shape, the body 2 of the pin being of circular transverse cross-section and having the usual neck portion 2^a of reduced diameter. The body 2 can be of wood or can be fabricated by molding from any of the suitable synthetic resin materials, including particularly polyethylene or linear polyethylene; cellulose ester or cellulose mixed ester compositions such as cellulose acetate, cellulose acetate-butyrate, cellulose propionate, cellulose acetate-propionate, or the like; and polystyrene or modified polystyrene compositions.

Body 2 is provided, throughout the length of neck portion 2^a, with a shallow transverse circularly extending groove, the upper and lower edges of which are indicated by edge lines 3 and 4, respectively, FIGURE 1. In other words, while the body 2 is of standard cross-sectional diameter in other areas, the neck thereof has a diameter somewhat less than standard. The upper and lower edges of the circularly extending groove, indicated at 3 and 4 respectively, are "radiused" in such fashion that sharp

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corners are avoided. It will also be noted that the groove extends in both directions well beyond the point of minimum diameter of the pin. The point of minimum diameter of the pin is located approximately where section 2-2 is taken, and the edges indicated at 3 and 4 are thus spaced respectively well above and below that point.

Disposed within the groove defined by edge lines 3 and 4, and completely embracing the neck portion 2^a of the pin, is a protecting band 5 capable of protecting the neck portion of the pin body from being notched, nicked, scratched, scarred or otherwise marred when the neck of the pin engages a sharp object, the band being of such width as to completely fill the groove. Advantageously, band 5 is capable of both absorbing shock and resisting notching and the like. Thus, particularly good results are obtained when band 5 is a relatively thin sheet of rubber, synthetic rubber, natural or synthetic resinous compositions, or is of a tape of glass fiber material, synthetic fiber material or rubber, the band in each case being of substantially greater deformability and resilience than the material from which body 2 is made. In such case, the band 5 can be entirely of such material, or can be of such material re-enforced by one or more layers of fabric, paper or the like.

The groove defined by edge lines 3 and 4 is shallow, the reduction in diameter of the neck of the pin being kept as small as possible commensurate with provision of adequate thickness of band 5. In this connection, the band 5 lies substantially entirely within the groove defined by edge lines 3 and 4, the thickness of the band 5 and the depth of the groove being substantially equal.

The surface of pin 1 is covered by the usual thin film or coating 6 which extends integrally over the areas adjacent neck portion 2^a and also over the outer face of band 5. The film or coating 6 can be formed in any of the conventional fashions now well known in the art and is of a composition capable of adhering tenaciously both to the surface of body 2 and the outer surface of protecting band 5. Coating or film 6 can be of any of the suitable varnishes, synthetic varnishes or enamels applied by dipping, spraying, molding or like procedures. Alternatively, the body can be molded of such material and in such manner that coating 6 is made unnecessary.

Depending upon the materials employed, band 5 can be adhered to body 2, either by the use of an adhesive other than the material of the band or by inherent adhesiveness of the band material during formation thereof, as when the band is molded or cured in situ. However, a particularly advantageous feature of the construction illustrated lies in the fact that, being firmly and permanently retained in the shallow groove of the neck of the pin body by film or coating 6, the band need not be adhered directly to the pin body.

As previously mentioned, band 5 advantageously serves both to prevent notching or the like of neck portion 2^a and as an impact absorbing or cushioning element; of these two functions, the ability to prevent notching and the like is of paramount importance. Accordingly, materials capable of protecting neck portion 2^a from being notched or scarred can be used for band 5 even when such materials have relatively little resilience. Thus, instead of employing a band of relatively resilient rubber or synthetic resin, for example, the band 5 can be of relatively dense, strong, non-woven, fibrous material. In such event, the material of coating or film 6 advantageously extends into the interstices of the fibrous band, so that the band is at least in part impregnated thereby.

While it will be understood that the invention is most useful when the body of the bowling pin is an integral body of molded resinous material, the invention can also be applied to pin bodies made of several parts molded

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from resinous material, or to pin bodies made from wood.

What is claimed is:

1. In a bowling pin, the combination of a pin body of a material subject to being notched by impact with other objects, said pin body including a neck portion having a substantially circular transverse cross section of smaller diameter than the portions of said body adjacent thereto, said body being provided at said neck portion with a shallow annular recess which extends longitudinally of said body through said neck portion, the edges of said recess being rounded to avoid sharp corners, and a thin annular protective band disposed in and completely filling said groove, said band being in direct contact with said body throughout the length of said recess and being of a material characterized by substantially greater deformability and resiliency than the material of said body to prevent failure of the pin due to occurrence of notches at said neck portion caused by impact with other objects.

2. A bowling pin in accordance with claim 1 and wherein the surface of said body is covered by a continuous solid outer film extending completely over said band and adhered both to said body and said band.

3. In a molded plastic bowling pin, the combination of a pin body including a neck portion having a substan-

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tially circular transverse cross-section of smaller diameter than the portions of the body adjacent thereto, said body being provided at said neck portion with a shallow annular transversely extending groove of such width as to extend over substantially the entire area of said neck portion, a thin annular protective band disposed in and completely filling said groove, said band being of a material characterized by substantially greater deformability than the material of said body to prevent said neck portion from being notched by impact with other objects and a single continuous solid film covering and adhered to the outer surfaces of both said body and said band.

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