April 4, 1961 W. F. GRAWEY 2,978,375

METHOD FOR RECONDITIONING PLASTIC COATED BOWLING PINS

Filed June 24, 1957

FIG. 1.

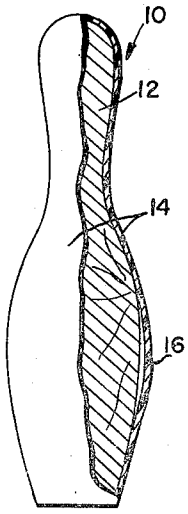


FIG. 3.

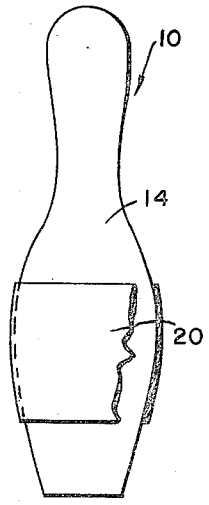


FIG. 4.

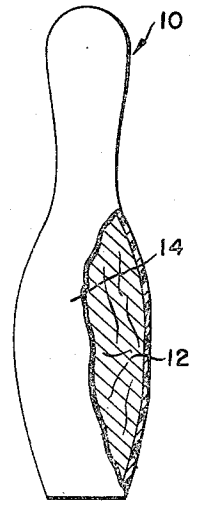
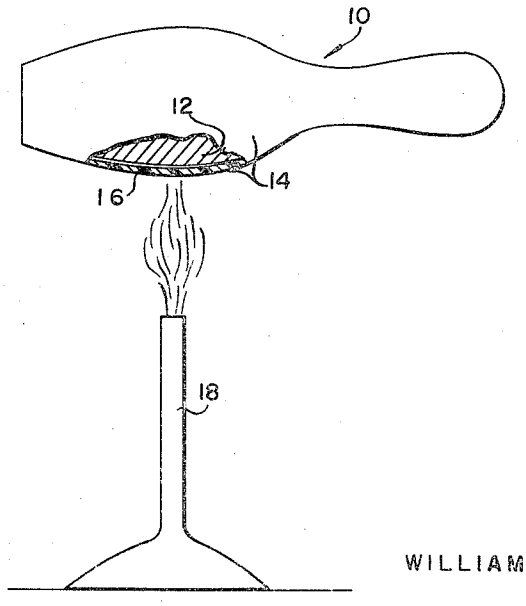


FIG. 2.



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United States Patent Office 2,978,375
Patented Apr. 4, 1961

2,978,375

METHOD FOR RECONDITIONING PLASTIC COATED BOWLING PINS

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Filed June 24, 1957, Ser. No. 667,431

1 Claim. (Cl. 154—104)

This invention relates to bowling pins and more particularly to an improved method of reconditioning used bowling pins of the type having an inner wooden core covered by a plastic coating.

Bowling pins of the plastic coated type are well known and have been so widely accepted that they are now sanctioned by the American Bowling Congress for tournament use. Such pins have a longer life than ordinary wooden pins in that the exterior surface is not subject to chipping and splintering upon impact, as are conventional wooden pins. Failure of plastic coated pins usually occurs as a result of the formation of blisters or pockets between the plastic covering and wooden core. Pins with such blisters or pockets lose much of their resiliency and sound hollow upon impact and, heretofore, have been discarded as of no further use.

While the useful life of plastic coated pins is longer than that of conventional all-wooden pins, repeated impact tends to compress the inner wooden core and thus reduce its diameter. Since the cover is a unitary construction, which tends to become reduced in thickness as a result of repeated impact and to thus assume a larger diameter, the bond between the core and cover breaks, resulting in the formation of the above noted pockets or blisters rendering the pins no longer fit for play.

The present invention contemplates a novel procedure for reconditioning blistered pins of the type described so that their useful life can be extended for a substantial period. It has been found that by heating the plastic coating until the same becomes relatively soft and subsequently applying a peripheral pressure to the softened coating, the latter can be effectively readhered or remolded to the compressed contour of the wooden core. In this condition, the pin is usable for an extended period of time. Indeed, since the core has already been initially compressed, additional compression is inherently resisted.

Accordingly, it is an object of the present invention to provide a method of reconditioning blistered plastic coated bowling pins so as to extend the useful life thereof.

A further object of the present invention is the provision of a novel method of the type described which is highly effective, but may be simply and economically performed.

These and other objects of the present invention will become more apparent during the course of the following detailed description and appended claim.

The invention may best be understood with reference to the accompanying drawings wherein an illustrative example is shown.

In the drawings:

Figure 1 is a side elevational view, with parts broken away, of a blistered plastic coated bowling pin before reconditioning by the present method;

Figures 2 and 3 are diagrammatic views illustrating progressive steps in he reconditioning process of the present invention; and

Figure 4 is a view similar to Figure 1 of the bowling pin after reconditioning in accordance with the process of the present invention.

Referring now more particularly to the drawings, there is shown in Figure 1 a bowling pin **10** of conventional construction including an inner core **12** of wood and a cover **14** made of a suitable thermoplastic material intimately bonded thereto. In Figure 1, the pin **10** is shown in a condition assumed after a period of extended use, during which time the core has been compressed as a result of repeated impact and the cover has separated therefrom to form a blister, as indicated at **16**. The pin **10** in this condition lacks resiliency and has a hollow sound upon impact and is, therefore, no longer suitable to be used. Heretofore, it has been the practice to discard such pins in favor of new ones.

The method of the present invention makes it possible to recondition such pins so that they can be again used for an extended period. In general, the method of the present invention contemplates a remolding of the outer plastic cover **14** under heat and pressure so that the same is again in intimate bonded relation to the compressed inner core **12**. While the exterior diameter of the reconditioned pin will have a dimension somewhat less than the exterior diameter of a new pin, the reconditioning operation of the present invention restores the lost resiliency to the pin and eliminates the hollow sound upon impact so that, except for the somewhat reduced exterior diameter, the reconditioned pin is as good as new. Moreover, because the inner core has already been compressed to a considerable extent, further compression during contined use is resisted.

Referring now more particularly to Figures 2 and 3 of the drawings, a pin in the condition shown in Figure 1 having a cover made of polyvinyl chloride was first subjected to heat, particularly adjacent the blister **16**, as by a Bunsen burner **18**, as shown in Figure 2, until the temperature of the plastic attained a value where the same was soft and pliable. Next, the pin was removed from the flame and then a fairly thick and strong elastic band of rubber **20**, as shown in Figure 3, was placed around the belly of the pin while the plastic was still soft. With the elastic band applying a pressure to the heated plastic sufficient to move the same into contact with the exterior surface of the compressed inner core, the pin was allowed to set until the temperature was lowered to ambient conditions.

The reconditioned pin is illustrated in Figure 4 and it will be noted that the cover **14** is again intimately bonded with the inner core throughout the entire exterior surface thereof. During the heating step, care should be exercised to prevent overheating to the point that the exterior surface is tacky. Overheating the cover would tend to cause the same to stick to the elastic band when the latter is applied thereto. When the cover is heated until it becomes soft, it has been found that there is no tendency for the elastic band to adhere thereto. Moreover, it has been found to be unnecessary to slit or otherwise rupture the cover in order to release the air within the blister. Such air apparently leaves through the pores of the wooden core **12** when pressure is applied.

It will be understood that the practice of the present method is not limited to the utilization of a Bunsen burner and an elastic band. Heat may be applied by any suitable means and may be simultaneously applied with the pressure, if desired. For example, a sectional mold in the shape of the pin lined with a yieldable material and provided with a built-in heating means could be employed. Moreover, in order to positively preclude the possibility of the exterior surface of the cover sticking to the pressure applying means, a suitable liner of silicone or the like could be utilized. Furthermore, while it is preferable to apply pressure throughout the periphery of

the pin, localized heat and pressure adjacent the blister only may be employed.

It thus will be seen that the objects of this invention have been fully and effectively accomplished. It will be realized, however, that the foregoing specific embodiment has been shown and described only for the purpose of illustrating the principles of this invention and is subject to extensive change without departure from such principles. Therefore, the invention includes all modifications encompassed within the spirit and scope of the following claim.

I claim:

A method of reconditioning bowling pins of the type having an inner compressible core and a cover of thermoplastic material intimately bonded thereto in which a blister has formed between the core and the cover due to the resistance of the cover to inward deflection and the permanent compression of the inner core as a result of repeated impact which comprises the steps of reducing the resistance of the cover to inward deflection by heating at least the portion of the cover forming the blister until the thermoplastic material becomes soft and pliable, and remolding the cover portion while soft and pliable directly to the contour of the permanently compressed core by applying mechanical elastic pressure about the circumference thereof in the region of the permanently compressed core containing the blister while the thermoplastic cover is still in heated and softened condition, and thereby pressing said cover into contact with the compressed intercore so as to form an intimate self-bonded engagement between the interior surface of the cover and the exterior surface of the core forming the blister.

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