METHOD FOR RENOVATING BOWLING PINS

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Application May 22, 1946, Serial No. 671,641

1 Claim. (Cl. 51—282)

This invention relates to a method and apparatus for renovating bowling pins after they have been used and require repairing and concerns itself with a method and means for removing the old lacquer from the pins in a speedy and efficient manner and re-cutting the bottoms of the pins in a manner that will more effectively maintain stability and then relacquering the treated pins.

It is well known that bowling pins are subjected to severe usage through impacts with the bowling balls which chip the pins and knocks off parts of the coating lacquer. In addition, the tumbling of the pins causes the bottoms to become somewhat bevelled so that they lose stability. After about two weeks use the pins require a renovating process before they can be used again.

It has been customary in the past to shave off the old lacquer by suitable tools and apply fresh lacquer. This, however, involves much labor and time and proved costly. Besides the diameter of the pins would often be reduced so that they would drop through the pinsetting machines. This causes delay and loss.

It is an object of this invention to overcome this slow and costly process in renovating pins by a process which is capable of scouring as many as thirty pins at one time in a single tumbler and producing a roughened or pitted surface to which fresh lacquer will stick, and in cutting the bottom to provide greater stability. This process approximately doubles the life of the pins and greatly reduces the cost of renovation.

The invention comprises the novel method and apparatus hereinafter described and more particularly pointed out and defined in the appended claim.

In the accompanying drawing which illustrates novel apparatus for carrying out the process in which similar reference numerals refer to similar features in the different views:

Fig. 1 is an elevational view of a tumbler for carrying out the main part of this invention;

Fig. 2 is an end elevational view of the said apparatus;

Fig. 3 is an elevational view of a new bowling pin before it has been put to use;

Fig. 4 is an elevational view of a pin with the lacquer shaved off in the process of renovating the pin according to the old method;

Fig. 5 is an elevational view of a pin from which the lacquer has been removed according to my novel method;

Fig. 6 is a view of a bowling pin that has been re-lacquered and is ready for use again;

Fig. 7 is an elevational view of an apparatus for recutting the bottom of the pins according to this invention;

Fig. 8 is a top plan view of the cutter used in the apparatus;

Fig. 9 is an elevational view of the cutter showing the slope of certain cutting elements; and

Fig. 10 is a fragmentary sectional view of a bowling pin illustrating a stabilizing bottom.

In referring now to the drawing, there is shown in Figs. 1 and 2 a tumbling machine in which a scouring of the pins takes place. This machine or apparatus comprises a frame composed of end standards 16 connected by lower transverse braces 12 and upper transverse braces 13. Extending inwardly of the center of the lower braces 12 are stub shafts 14 upon which a cylinder or tumbler 15 is journaled which is provided with suitable bearing 16 for the stub shafts. This cylinder or tumbler which is closed at its ends is similar in shape to a barrel and might be called barrel shaped in order to cause a better tumbling of the pins. Within the tumbler there is fixed a rod 17 the ends of which may be secured by suitable blocks 1A upon the inner sides of the ends of the tumbler which blocks may be provided with sockets to receive the ends of the rod 17. While this rod is shown concentric of the tumbler, it may be eccentrically positioned.

Adjacent the ends of the tumbler and surrounding the same, are grooved pulleys 18, one adjacent each end of the tumbler. A belt 19 surrounds each pulley 18 and these belts are trained over pulleys 20 secured upon a shaft 21 journaled in the upper cross braces 13. One end of the shaft extends beyond the frame and supports a pulley 22 which is connected by a belt 23 with a pulley 24 on a motor shaft 25 extending from a motor 26 supported upon a platform 27 secured to the frame. The tumbler may be provided with a suitable door or gate 28 for insertion and removal of the pins. These belt drives 19 support the tumbler and eliminate vibrations; the stub shafts merely serving as guides.

In Fig. 3, there is shown a new bowling pin 23a.

In Fig. 4 there is shown a bowling pin 23 from which the lacquer has been removed by knives or cutters according to the old method after the pin has been in use several weeks. In Fig. 5, there is shown a used pin 30 which has been scourcd according to my new process and Fig. 6 shows the scourcd pin 31 after fresh lacquer has been applied.

After the pins have been given the first treatment in the tumbler, it may be desirable to cut the bottoms thereof to cause stabilization. In
Figs. 7 to 9, there is shown a simple mechanism for performing this operation. In these figures, there is shown an apparatus 33 having a support 33 at one end through which an adjustable screw 34 extends which is provided with an operating crank 35. Upon the inner end of the screw, there is a partly-spherical socket member 36 for embracing the top end of a bowling pin 37. This socket member is preferably screwed upon the end of the screw so that the screw can be rotated relative thereto.

At the other end of the base, there is a motor 31 having a shaft 38 to which a cutter 39 is coupled through a coupling 40 which comprises a circular block of wood having a shaft 41 extending therethrough. One end of the shaft is coupled to the motor shaft while the other end terminates in a tapered portion 41B adapted to extend into the cylindrical socket or passage 42 provided in the center of the bottom portion of the pins.

The forward face of the cutting block is provided with two level saw-toothed cutting elements 43 which are parallel and arranged upon opposite sides of the center. They may be set in grooves cut in the face of the block and are designed to cut a central and level recess 44 in the bottom of the pins as shown in Fig. 10. The length of these knives 43 approximate one inch. From the end of one cutting knife 43, there extends a sloping saw-toothed knife 45 which extends beyond the knife 43 to a point adjacent to the periphery of the block and from the end of the other knife 43, there extends a second sloping saw-toothed knife 45 which extends beyond the first knife 45 to a point adjacent the periphery of the block. The knives 45 approximate one and a half inches in length and are designed to cut a sloping portion 46 around the recess 44. The slope of the knives 45 should be approximately two degrees from a vertical plane as shown in Fig. 9. These saw-teeth knives produce a somewhat roughed bottom on the bowling pins which tends toward greater stability.

To cut the bottom of a pin, it is only necessary to insert the same in the lathe as shown and described and start the motor, the knives 43 cutting the central recess 44 and the knives 45 cutting the outwards sloping surface or portion 46. If the pin tends to rotate it may be held by the attendant or a vise may be used. This sloping portion provides a better wearing surface upon the bottom of the pins and prevents the formation of rounded or bevelled edges which cause the pins to tumble over too easily when in use or when being set up by pins setters.

According to my method or process, about six quarts of silicon sand is placed in the tumbler and one to two pins of a lacquer solvent, such as carbon tetrachloride, which is a slow solvent which is non-inflammable, is poured upon the sand to moisten the same making a solvent sand bath; then about thirty pins which need renovation are inserted in the tumbler. Then the motor is started to rotate the tumbler at from 30 to 50 revolutions per minute for from two to ten hours. The carbon tetrachloride softens and tends to dissolve the lacquer on the pins during rotation; the moist sand sticks to the pins so that they become sanded. And as these sanded pins rub against each other during the tumbling process, one abrades the lacquer from another. However, the necks of the cutters do not rub against each other very often so as to abrade the lacquer from the necks of the sanded pins, special means must be provided in the tumbler. In the present instance, the rod 11 serves such a purpose. In tumbling, the necks of the pins will ride over the rod as indicated by the pins 38a in Fig. 1 and the lacquer will be abraded from the pins. This process removes the first or original coat of lacquer of the pins.

After the pins have been tumbled for from two to three hours, they are removed from the tumbler, at which time they will have a coating or bloom of dust particles made up of lacquer as shown by the pins in Fig. 5. The latter also puts a pebble or pit finish on the pins and such a surface retains the fresh lacquer and prevents the same from cracking and lengthens the life of the pins.

After the sanding operation, the bottoms of the pins are cut in the lathe as previously explained to provide the central recess 44 and the two-degree sloping surface 45. During this bottom cutting with the saw-toothed knives a certain amount of burring occurs.

After the bottoms of the pins have been cut as above explained to obtain better stabilization, they are returned to the tumbling apparatus in which about a half bushel of saw dust has now been placed. Green sawdust is preferable, but if dry sawdust is used, it should be moistened. Then about a quart of a petroleum base such as gasoline or naphtha, or any suitable solvents that will enter the pores of the pins is poured over the saw dust, producing a saw dust bath. The motor is then put in operation to rotate the tumbler at approximately thirty to fifty R. P. M. for a period of fifteen to twenty minutes. This tumbling in a saw dust bath will remove the burring that occurred from the cutting operation and will remove the bloom or dust particles on the pins that resulted from the sanding operation and put the pins in condition for a fresh coat of lacquer. The pins are then lacquered in any well-known manner and after drying are ready for use again.

The process involving this invention possesses a number of important advantages over former practice. First, it reduces the labor about 90%. It doubles the life of the pins, since the sanding operation produces a piston effect, which effectively retain the fresh lacquer and prevent the same from cracking and since the manner of cutting the bottom produces a stabilized base that will endure. In fact, it has been found in practice that pins with bottoms out square according to former practice will not endure for any suitable length of time before they will topple and fall. On the other hand, pins finished with bottoms as herein will endure as long as the pins last and provide satisfactory stabilization.

A feature that might be stressed is the sanding operation which produces a pitted surface, that is a surface with small holes or dents in the surface of the pins. When pins with such a surface are covered with lacquer, the lacquer enters the pins or cavities resulting from the sanding operation and becomes firmly bonded to the pins. In fact, it is believed that it cannot be scraped off with a cutting tool without cutting away some of the wood. The lacquer could be readily scrapped away with a cutting tool from pins generally used in the past, but that was a slow and costly operation.

I am aware that many changes may be made and various details of construction varied respecting the apparatus and the steps of the
method may be varied without departing from the principles of this invention, so I do not propose limiting the patent granted thereon otherwise than necessitated by the appended claim.

I claim as my invention:

The herein described steps in the method of renovating used lacquer coated bowling pins which consists in tumbling said pins in a silica sand bath containing a lacquer solvent, supporting a rod in the tumbling area for engaging the necks of the pins during the tumbling thereof, continuing said tumbling operation until the lacquer is substantially removed from said pins, then tumbling said pins in a bath of sawdust moistened with a petroleum base for cleansing the same.

ALVIN E. SPINDT.

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