Sept. 15, 1964 R. TERRY 3,148,880

TREATING APPARATUS ADAPTED TO BE PLVOTALLY DISPOSED IN THE PATH OF A CONVEYED BOWLING PIN

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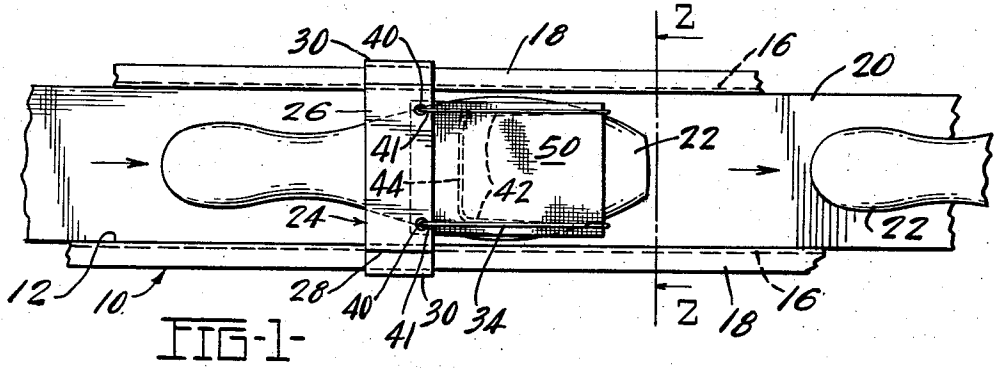


FIG-1-

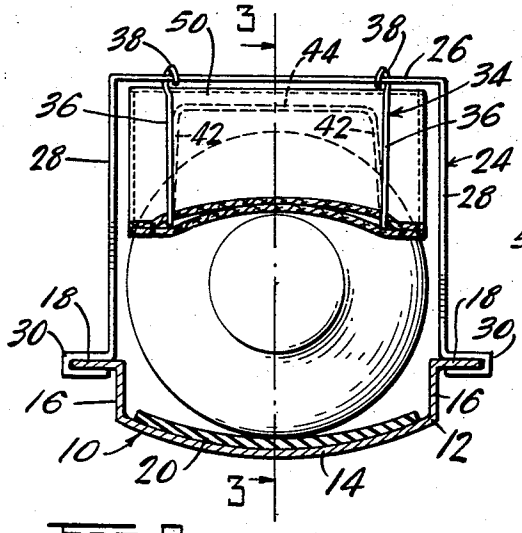


FIG-2-

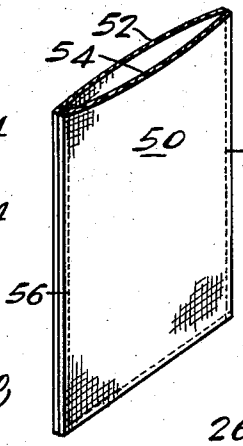


FIG-4-

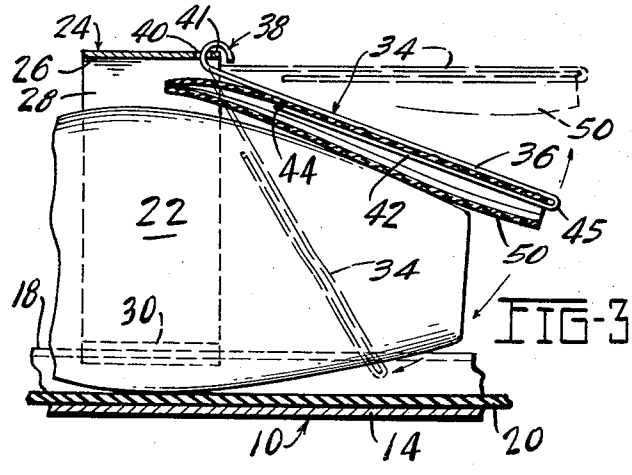


FIG-3-

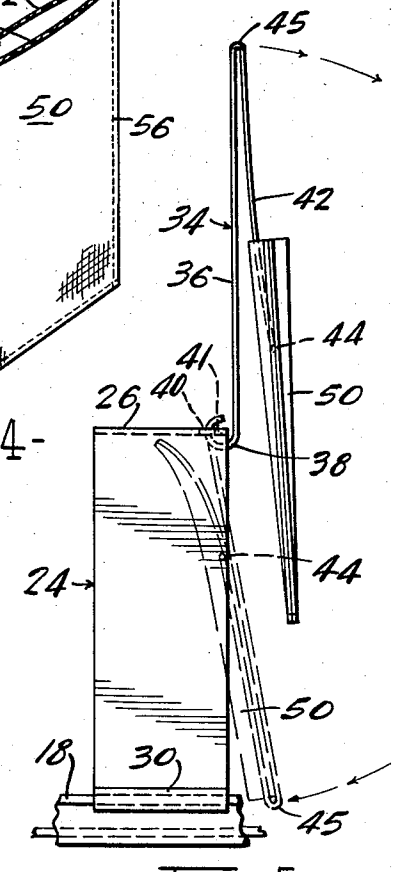


FIG-5-

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TREATING APPARATUS ADAPTED TO BE PIVOTALLY DISPOSED IN THE PATH OF A CONVEYED BOWLING PIN

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This invention relates to apparatus for applying a cleaning material, polishing material or both to bowling pins, and relates more especially to an apparatus or device which may be advantageously associated with an automatic bowling pin setting machine or apparatus for automatically cleaning or polishing the surfaces of bowling pins during use.

It is well-known that bowling pins become coated or covered with dust, dirt or other foreign matter during use, and must be cleaned periodically. Heretofore it has been a practice to manually wash or clean each individual bowling pin, an operation which is laborious and time consuming. With the recent advent of automatic apparatus or machines for automatically setting the pins on a bowling alley, more frequent cleaning of the bowling pins is essential to the successful operation of the pin-setting apparatus as dirt or dust or foreign matter collected upon the bowling pins impair the successful functioning of the mechanism of the pin delivering or pin-setting units or means.

The present invention relates to an apparatus or device which is adapted to be associated with or oriented in an automatic bowling pin setting machine or apparatus whereby the bowling pins upset during a frame of play are successively brought into contact with a means for cleaning the same and, if desired, applying a coating of polish or other coating material onto the surfaces of the bowling pins.

The invention has for an object the provision of a simple, yet effective, device particularly adaptable for association with an automatic bowling pin setting machine usable in a position of movement of the bowling pins at some region of traverse between the bowling pin pick-up arrangement and the delivery of the pins into their respective pin-delivering or pin-setting units.

An object of the invention resides in an apparatus embodying a pad or applicator of flexible material, impregnated or saturated with a cleaning agent, which is disposed in a position to be engaged successively by moving bowling pins in their traverse toward the individual pin-setting control units of an automatic bowling pin-setting machine.

Another object of the invention is the provision of an applicator for applying a cleaner or coating material to successively moving bowling pins wherein each individual pin is moved into engagement with the applicator arranged to engage by wiping contact a substantial surface of each bowling pin whereby the pins are maintained in a clean condition without the necessity of interrupting the operation of the pin-setting apparatus to effect manual cleaning of the bowling pins.

Another object of the invention is the provision of a bowling pin cleaning device which may be conveniently associated with a bowling pin conveyor or transfer means of an automatic bowling pin setting machine which may be applied to any automatic pin-setting machine and which is readily removable for reconditioning or resaturating the applicator with cleaner or polishing agent.

Another object of the invention is the provision of bowling pin surface treating means particularly for use with an automatic pin-setting machine, the surface treating means comprising two or more applicators adapted to be disposed in a path of traverse of bowling pins wherein one applicator is provided with a bowling pin cleaning agent and another with a polishing agent, the applicators being engaged by the moving bowling pins whereby the surfaces of the pins are cleaned and polished by wiping action.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of a form of the invention, which may be preferred, in which:

FIGURE 1 is a top plan view of a bowling pin conveyor forming a component of an automatic pin-setting machine, illustrating a form of applicator or bowling pin cleaner of my invention in conjunction therewith;

FIGURE 2 is a transverse sectional view taken substantially on the line 2—2 of FIGURE 1;

FIGURE 3 is a longitudinal sectional view taken substantially on the line 3—3 of FIGURE 2 illustrating wiping contact of the bowling pin with the applicator;

FIGURE 4 is an isometric view illustrating a preferred form of applicator adapted to be impregnated or saturated with a bowling pin cleaning agent or polishing agent, and

FIGURE 5 illustrates a method of assembling and disassembling the applicator with a support or holder.

While the bowling pin surface treating apparatus or device of the invention is illustrated as employed with a bowling pin transfer conveyor of the belt-type forming a component of an automatic pin-setting machine, it is to be understood that the device of the invention may be employed in any zone of the movement of bowling pins in an automatic pin-setting machine between the region of pick-up of the pins from the alley to the delivery of the pins into the individual pin-setting units of the machine.

The conventional type of pin-setting apparatus or machine embodies a pick-up wheel which picks up the upset bowling pins and delivers them onto a rectilinear conveyor, the latter delivering the pins to a region of transfer of the pins into the individual pin-setting units. The bowling pin cleaner or treating apparatus of the invention is preferably associated with the conveyor component of a pin-setting machine which conveys the pin successively in a rectilinear path to facilitate wiping contact of the pins with a cleaning or polishing agent on a pad or applicator.

Referring to the drawings in detail and initially to FIGURES 1 through 3, the automatic pin-setting apparatus is inclusive of a longitudinally extending frame structure **10** which includes a longitudinally extending trough shaped member **12** having a base or web portion **14** and upwardly extending side wall portions **16** which terminate in outwardly projecting flanges **18**. Disposed within the trough shaped member **12** is a conveyor **20** of the flexible belt type formed of comparatively heavy fabric, canvas or the like and which is adapted to support the bowling pins **22**, one bowling pin and a portion of a second pin being illustrated in FIGURE 1.

As indicated in FIGURE 1, the bowling pins are adapted to be disposed upon the conveyor belt **20** in succession, the belt **20** being movable in a right-hand direction as viewed in FIGURE 1 for conveying the bowling pins to the individual pin-setting units (not shown) of the automatic pin-setting machine. The bowling pin cleaning, polishing or surface treating apparatus or device of the invention is inclusive of a U-shaped member or frame **24** preferably formed of sheet metal having a horizontal portion **226** spaced above and extending crosswise of the conveyor **20** as shown in FIGURES 1 and 2.

The opposed leg portions **28** of member **24** are formed at their lower end regions with hook-like portions **30**

which embrace the laterally extending flanges 18 of the frame member 12 supporting the conveyor 20.

The hook-like portions 30 are of a dimension to be snugly fitted over the flanges 18 and thereby position the U-shaped member 24 in fixed position with respect to the pin conveyor. The member 24 provides a frame for supporting the pad or applicator arranged to be engaged by the bowling pins as they are moved along by the conveyor 20.

A support 34 for the applicator or pad is preferably formed of metal wire. The support 34 is configurated with parallel legs 36 fashioned at their distal ends with hook-like portions 38 which engage respectively in openings 40 formed in the frame or support 24 and is swingable relative to the support 24. The applicator support or holder 34 is formed with a U-shaped portion including generally parallel leg portions 42 connected by a transversely extending bight portion 44 as shown in FIGURE 2. The leg portions 42 are continuations of the portions 36 bent at the region 45 upon the latter portions in the manner illustrated in FIGURE 3.

The wire frame or holder 34 is adapted to support a pad or applicator 50 illustrated in FIGURE 4. The pad or applicator 50 is preferably of double thickness comprising layers 52 and 54 which are joined together by stitching 56 at their lateral meeting or mating edges. The pad may be formed of one piece of material lapped upon itself and sewed or joined at the meeting edges.

The pad or applicator 50 may be fashioned of any suitable flexible material such as heavy cloth, felt, sheepskin or other material which may be saturated or impregnated with a cleaning liquid, detergent, polishing agent or other surface treating material suitable for wiping contact with a bowling pin for wiping dust, dirt or foreign matter from a bowling pin and retain the material wiped from the pin or for polishing or coating the surfaces of bowling pins.

The particular construction of dual layered pad or applicator 50 and the frame 34 supporting the same facilitates the ready application to the frame and its removal therefrom. The method of assembling the pad 50 upon the frame 34 is illustrated in FIGURE 5. When it is desired to affix or apply the pad 50 to the wire frame 34, the frame is swung about the hook-like portions 38 to the position illustrated in FIGURE 5 wherein the leg portions 42 extend downwardly from the bend regions 45.

In this position the pad 50 is moved upwardly as viewed in FIGURE 5 with the layers 52 and 54 slightly separated to accommodate or telescope over the leg portions 42 and the transversely extending portion 44 until the upper edge region of the pad 50 as viewed in FIGURE 5 is adjacent the bend regions 45 of the frame. With the pad 50 in this position, the pad and frame 34 are swung downwardly in a clockwise direction about the connecting portions 41 of the frame 24 adjacent the openings 40 as viewed in FIGURE 5 to the position indicated in broken lines in FIGURE 5.

The weight of the pad 50 retains the same in assembled position on the frame 34 as the bent regions 45 provide abutment or positioning means engaging the lower edge of the pad as shown in broken lines in FIGURE 5.

The applicator or pad 50 may be impregnated with a suitable cleaning liquid or agent. The action of a bowling pin moved by the conveyor into engagement with the pad 50 is illustrated in FIGURE 3. As the large end of the bowling pin is advanced by the conveyor in a right-hand direction as viewed in FIGURES 1 and 3, the end region of the bowling pin contacts the pad or applicator 50 and causes swinging movement of the applicator and its supporting frame 34 to the position indicated in FIGURES 2 and 3 to an extent to facilitate passage of the bowling pin.

The wiping contact between the surface of the bowling pin and the cleaning agent on the applicator effects a cleaning or treating of the surface of the bowling pin to remove dirt or foreign matter which adheres to the material of the applicator or pad. As the bowling pins are cycled repeatedly along the conveyor in contact with the applicator and through the pin-setting machine during play, the successive wiping contacts of the bowling pins with the cleaner on the pad 50 results in all of the surface areas of the bowling pins being eventually engaged with the pad. Thus cleaning of the bowling pins is assured by the repeated cycling or passage of the bowling pins into wiping contact with the applicator.

The dual layer pad provides for reversibilty. The pad may be readily reversed by disengaging the same when the supporting frame 34 is swung to its full line position indicated in FIGURE 5, the pad removed by slidable movement from the legs 42, the pad reversed and reapplied in the manner hereinbefore described.

It is to be understood that a combined cleaning and polishing liquid may be applied to the material of the pad 50 if desired. As hereinbefore described the pad is readily removable for cleaning purposes and to be resaturated or impregnated with fresh cleaner or polishing liquid or material. If desired two applicator constructions of the character illustrated may be disposed in spaced positions lengthwise of the conveyor, one for applying a cleaning agent and another for applying a polish or other coating to the bowling pins.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than as herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

I claim:

1. Apparatus for treating the surfaces of bowling pins including, in combination, a frame adapted to be positioned adjacent a bowling pin transfer means of an automatic bowling pin setting machine, a pad of flexible material adapted to contain a bowling pin treating agent, said pad being fashioned of dual layers of the flexible material joined at opposed parallel edge regions, a relatively movable support for said pad having a portion positioned between the dual layers, said pad support being suspended from said frame for swingable movement and adapted to be normally arranged in the path of movement of bowling pins at the pin transfer region whereby the pad is engaged by the moving pins and surface areas of the pins subjected to the treating agent.

2. Apparatus for treating the surfaces of bowling pins including, in combination, a generally U-shaped frame adapted to be positioned adjacent a bowling pin transfer means of an automatic bowling pin setting machine, a pad of fibrous material adapted to contain a bowling pin treating agent, said pad being of sleeve-like formation, a relatively movable support for said pad having a portion extending into the interior of the pad, said pad support being formed of wire swingably suspended from said frame and adapted to be normally arranged in the path of movement of bowling pins at the pin transfer region whereby an exterior surface of the pad is engaged by the moving pins and surface areas thereof subjected to the treating agent.

3. Apparatus for treating the surfaces of bowling pins including, in combination, a frame adapted to be positioned adjacent a bowling pin transfer means of an automatic bowling pin setting machine, a sleeve of flexible material forming a pad adapted to contain a treating agent, a relatively movable support for said sleeve comprising a member having parallel legs joined by a bight portion, each leg of the member being bent upon itself at any intermediate region, the bend in each leg at said intermediate region providing an abutment means, said sleeve being telescoped over the bight portion and adjacent portions of the legs and engaged with the abutment means, the end regions of the parallel legs being pivotally connected with the frame whereby the sleeve-like pad and pad supporting member are swingably suspended from the frame and adapted to be positioned in the path of move-

ment of the bowling pins at the pin transfer means and engaged by the pins whereby the surface areas thereof are subjected to the treating agent.

4. Apparatus for cleaning the surfaces of bowling pins including, in combination, a generally U-shaped frame adapted to be positioned adjacent a bowling pin transfer conveyor of an automatic bowling pin setting machine, a sleeve of fibrous material adapted to contain a cleaning agent, a relatively movable support for said fibrous sleeve comprising a member having parallel legs joined by a bight portion, each leg being bent upon itself at an intermediate region, the bend in each leg at said intermediate region providing an abutment means, said sleeve being telescoped over the bight portion and adjacent portions of the legs and engaged with the abutment means, the end region of each leg being connected with the frame whereby the sleeve and sleeve supporting member are adapted to be swingably disposed in the path of movement of the bowling pins at the pin transfer means and engaged by the pins whereby the surface areas thereof are cleaned by the cleaning agent.

5. Apparatus for treating the surfaces of bowling pins including, in combination, a frame adapted to be positioned adjacent a bowling pin transfer conveyor of an automatic bowling pin setting machine, a sleeve of flexible material adapted to contain a treating agent, a relatively movable support member for said pad formed of wire configurated into U-shape having substantially parallel legs joined by a bight portion, each leg being bent upon itself at an intermediate region, the bend in each leg at said intermediate region providing an abutment means, said sleeve being telescoped over the bight portion and adjacent portions of the legs and engaged with the abutment means, and an end region of each leg being pivotally supported by the frame whereby the sleeve and sleeve support member are adapted to be swingably suspended in the path of movement of the bowling pins at the pin transfer means and engaged by the pins whereby the surface areas thereof are subjected to the treating agent.

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