

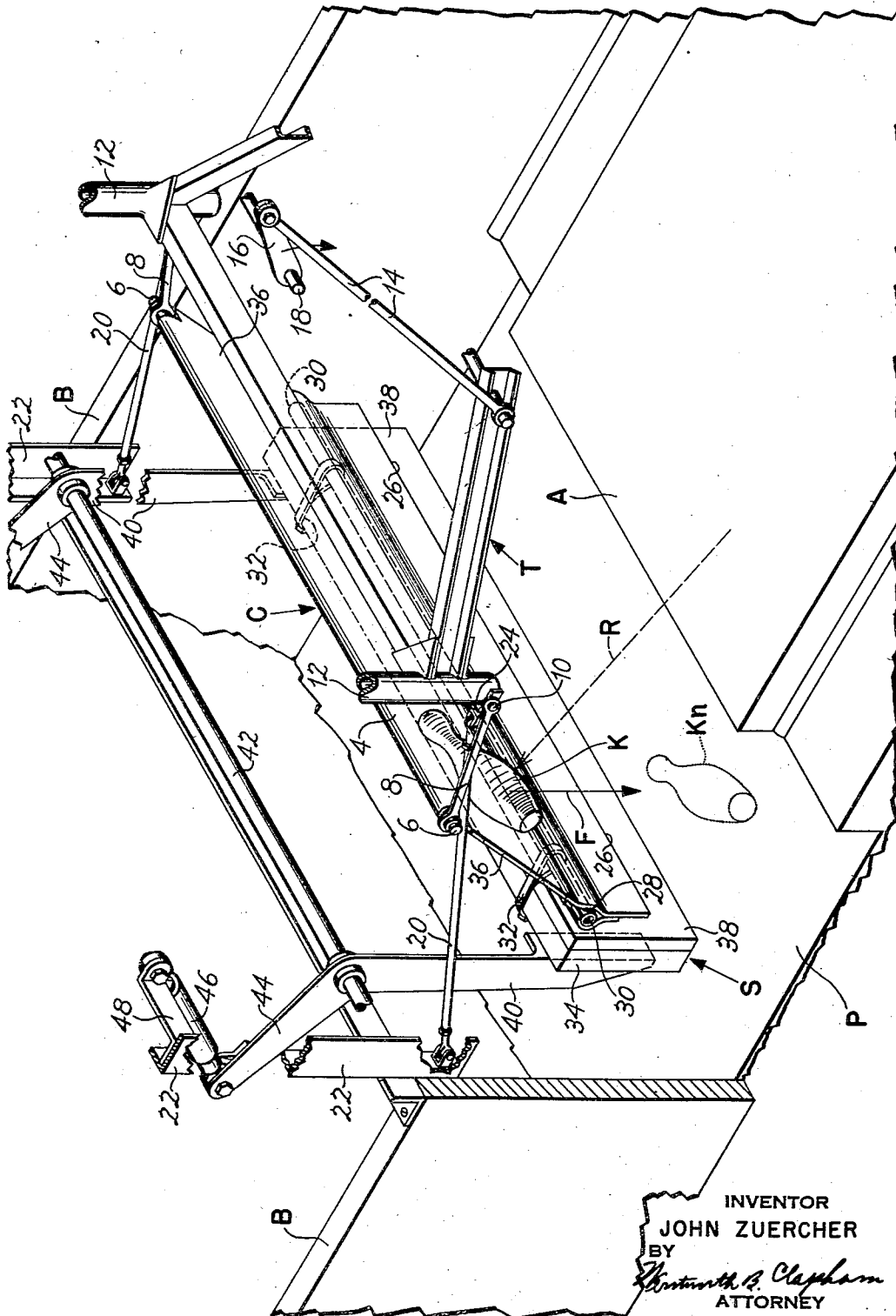
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PIN CURTAIN FOR PINSPOTTER

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PIN CURTAIN FOR PINSPOTTER

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6 Claims. (Cl. 273—42)

This invention relates to bowling alley apparatus, and more particularly to a device for preventing bowling pins knocked from a bowling alley by a ball from flying about and upwardly in the pit of a bowling alley, or back into the gutters or up a bowling alley.

The present invention is particularly advantageous as an adjunct for a bowling pin spotting machine since it prevents bowling pins knocked or falling from the playing bed of a bowling alley from flying upwardly into the operating mechanisms of a bowling pin spotting machine where they might cause damage to such parts.

The invention also solves the problem of preventing pins hit by a ball and falling into the pit of a bowling alley from flying back into the gutters or up the alley where illegal pinfall might result and also where it is necessary to provide suitable means for removing such pins from the alley and the gutters either manually or by mechanical devices.

The present invention consists in a transverse generally vertically positioned curtain mounted above the pit and extending downwardly thereinto adjacent to and in front of the backstop. This curtain preferably is held taut and inclined upwardly away from the backstop, so that when a pin strikes the curtain, it will be deflected downwardly into the pit of the bowling alley and come to rest therein.

The invention also consists in the provision of a resiliently mounted backstop so constructed and coacting with the anti-flyback curtain that balls are deflected downwardly into the pit and substantially prevented from flying back onto a bowling alley. In this way, danger of their bouncing back onto the alley or gutters is substantially, if not entirely, eliminated.

It is an object of the invention to provide an improved bowling pin handling mechanism for use with a bowling alley, and more particularly in connection with an automatic bowling pin spotting machine for preventing flying about of bowling pins in the pit of a bowling alley, or forwardly therefrom onto the alley or the gutters thereof, or upwardly into the pin spotting machine.

It is a further object of the invention to provide a generally vertically positioned though inclined anti-flyback apron or curtain which extends across the pit of a bowling alley in front of the backstop or cushion, which is active in deflecting bowling pins knocked from the playing bed of a bowling alley downwardly into the pit of the alley.

It is a further object of the invention to provide a transverse flexible bowling pin deflecting curtain for deflecting flying bowling pins downwardly into the pit of a bowling alley and which is operative also in connection with a resiliently mounted backstop for preventing bowling balls from bouncing out of the pit of a bowling alley onto the playing bed and gutters thereof.

With these and other objects not specifically mentioned in view, the invention consists in certain combinations and constructions which will be hereinafter fully described, and then set forth in the claims hereunto appended.

The accompanying drawing is an isometric view illus-

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trating a preferred form of the invention shown in conjunction with a vertically reciprocating pinspotter table suspended over the alley bed and a resilient backstop S mounted in pit P of a bowling alley A.

The pit curtain embodying the invention and designated generally C, extends transversely across pit P of bowling alley A in front of and spaced from backstop or cushion S. Curtain C is formed of a sheet of flexible material such as rubber, or canvas, laminated rubber and canvas, or any suitable fabric or sheet material which is strong and durable and can stand flexing without breaking or tearing. A leather curtain has been found to give satisfactory results. In the illustrated embodiment, the upper end 4 of pit curtain C is secured to a horizontal rod 6, the ends of which are supported in arms 8, swingably mounted on suitable studs 10 projecting from and held by vertical frame members 12 of a vertically reciprocating pin spotter table T. This table may be of the same type and construction as that disclosed in co-pending application, Serial No. 180,174, filed by Holloway et al. August 18, 1950, now Patent 2,781,195, issued February 12, 1957, and since it forms no specific part of the invention, further description and showing thereof are deemed unnecessary.

Table T is supported at each side for movement to and from alley A by a pair of connecting and supporting rods 14, the upper ends of which are pivoted to a pair of crank arms 16 mounted on a horizontal shaft 18 rotated by suitable means (not shown) in proper timed relation with the rest of the machine (not shown). For simplicity of illustration, only one rod 14 and crank arm 16 are shown.

A pair of guide rods 20, each pivoted at one end to stationary frame members 22 of the machine, and at their other ends pivoted to a suitable bracket 24 attached to table T frame members 12, are provided to guide table T during its vertical movements and also to maintain it in a substantially horizontal plane at all times. Guide rods 20 also tend to prevent side sway of the table due to the manner in which they extend from the table frame 12 at an outward angle. Arms 8 extend rearwardly and above guide rods 20 and rest loosely thereon. This provides a flexible and movable support for the upper end of pit curtain C, such that when table T is in its "up" position, curtain C is taut. When thus positioned, it is located in operative position, and any flying pins striking it will be deflected downwardly into the pit. In this manner pins are prevented from flying upwardly and over the backstop into operative machine parts. So also pins are prevented from flying back onto the gutters or in front of the pin supporting deck of a bowling alley from which they must be removed either manually or by mechanism provided for that purpose. When, however, table T is lowered for respotting purposes, not shown herein or described in detail, curtain C flexes downwardly or moves downwardly further into the pit, depending upon whether it hangs freely from rod 6, or is anchored by straps 32, as shown in the drawing.

In the preferred embodiment of the invention illustrated herein, about one-third of the distance from the bottom edge 26 of the curtain, there is provided a transverse sleeve or pocket 28 which carries a horizontal rod or tube 30. Straps 32, attached to the upper portion of back stop backing plate 34, hold the lower portion of curtain C so that the major upper portion 36 thereof forms a resilient, upwardly inclined or angular sheet or wall in front of and above backstop S. Therefore, the arrangement of the curtain is such that when a ball is thrown and pins fly about the pit, they tend to strike the curtain and are deflected downwardly into the pit and are thus prevented from damaging the spotting table T or knocking down standing pins or flying up the alley. In the drawing, broken line arrow R indicates the path a flying pin might

take into pit P. Full line arrow F indicates the path this pin, deflected by curtain C, takes into pit P. The dotted lines Kn indicate the pin after being deflected by said curtain into the pit P.

Backstop S consists of a board or sheet 38 such as rubber, canvas or fiber extending transversely across the rear end of the pit and mounted on a transverse backing plate 34 suitably attached to a pair of arms 40 fulcrumed on a horizontal shaft 42 supported on each end by suitable bearing brackets (not shown) which may be conveniently attached to the frame structure 22 secured to the kick-backs B of the alley. Each backstop supporting arm 40 is provided with an extension 44. To the free end of each extension 44 is pivotally connected one end of a suitable shock absorber 46. The other end of each shock absorber 46 is attached to a bracket 48 secured to the machine frame 22. In the drawing, only one shock absorber 46 and bracket 48 are shown, it being understood that an identical arrangement is used for the extension 44 shown at the right. This arrangement provides a controlled resiliency for the backstop, and minimizes bouncing of the bowling balls after hitting said backstop.

The invention above described may be varied in construction within the scope of the claims, for the particular embodiments selected to illustrate the invention are but a few of the possible concrete forms which my invention may assume. The invention, therefore, is not to be restricted to the precise details of the structures shown and described.

What I claim is:

1. A pin deflecting device for a bowling pin spotting machine located at the pit end of a bowling alley and provided with a pin spotting and respotting table comprising a frame forming a part of said table suspended above the pin supporting bed of said alley, a pivoted arm mounted at each side at the rear of said frame, a cross member supported by the free ends of said arms, a flexible substantially pit-wide curtain attached at one end to said cross member, a transverse pocket formed in said curtain adjacent the lower end thereof, an elongated rod in said pocket, a backstop located at the rear of said pit and rearwardly spaced relative to said curtain, means attaching said rod to said backstop, and means for moving said frame to and from said bed of said alley, said frame when located away from said alley being operative through said cross member and rod to tauten said curtain and form a forwardly inclined resilient deflecting surface for directing flying pins into said pit.

2. The device defined in claim 1, means movably mounting said backstop, including spaced support arms for said backstop, dash pots for absorbing shocks imparted to said backstop by the impact of an object striking thereagainst from the alley side thereof, and means connecting said dash pots to said arms.

3. A device for use with a bowling pin spotting machine in preventing bowling pins knocked down by a ball from flying about in the pit of an alley and back onto said alley and balls from bouncing back onto said alley or gutters thereof comprising a backstop, a pit-wide curtain extending transversely across said pit and above and in front of said backstop, a support, means attaching the upper end of said curtain to said support whereby said curtain depends therefrom and provides a deflecting surface for pins striking thereagainst, means attaching a lower portion of said curtain to the top of said backstop, said curtain having an apron depending downwardly from said portion attached to said backstop, and resilient mounts for said backstop, said backstop and curtain co-

acting to deflect flying pins downwardly into said pit and substantially eliminate the bouncing of balls back onto said alley or said gutters.

4. In a bowling alley installation of the type comprising an alley terminating in a pit, and a pin spotting machine associated with the alley and provided with a pin spotting table disposed above the alley bed adjacent the pit and adapted to be moved to and from the alley bed for spotting and respotting pins on the alley bed, the combination of a backstop, means mounting said backstop in the pit transversely thereof, a pin-deflecting curtain disposed transversely of the pit and extending upwardly and forwardly from said backstop, first mounting means attached to the upper edge of said curtain and disposed adjacent the rear end of the table of the pin spotting machine, and second mounting means attached to the lower edge of said curtain and disposed adjacent the upper edge of said backstop, whereby said curtain is mounted in an inclined position in which the curtain effectively closes the space between said backstop and the pin spotting machine table.

5. In a bowling alley installation of the type comprising an alley terminating in a pit, and a pin spotting machine associated with the alley and provided with a pin spotting table disposed above the alley bed adjacent the pit and adapted to be moved to and from the alley bed for spotting and respotting pins on the alley bed, the combination of a substantially rigid backstop disposed transversely in the pit at a point spaced forwardly from the rear wall thereof, means mounting said backstop for rearward movement under the impact of objects striking the front face of the backstop, a flexible substantially pit-wide deflecting curtain extending upwardly and forwardly from said backstop and having its lower edge attached to said backstop, the length of said deflecting curtain approximating the space between the backstop and the pin-spotting table when the table is in raised position, and mounting means spaced above the plane of the alley bed and secured to the upper edge of said curtain.

6. In a bowling alley installation of the type comprising an alley terminating in a pit, and a pin spotting machine associated with the alley and provided with a pin spotting table disposed above the alley bed adjacent the pit and adapted to be moved to and from the alley bed for spotting and respotting pins on the alley bed, the combination of a substantially rigid backstop disposed transversely in the pit at a point spaced forwardly from the rear wall thereof, means mounting said backstop for rearward movement under the impact of objects striking the front face of the backstop, a flexible substantially pit-wide deflecting curtain extending upwardly and forwardly from said backstop, means securing the lower edge of said curtain to said backstop at the upper edge of the backstop, and means securing the upper edge of said curtain to the rear edge of the pin spotting table.

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