

No. 811,476.

F. W. BRINKMEYER.  
BOWLING ALLEY.

PATENTED JAN. 30, 1906.

APPLICATION FILED NOV. 17, 1904.

3 SHEETS—SHEET 1.

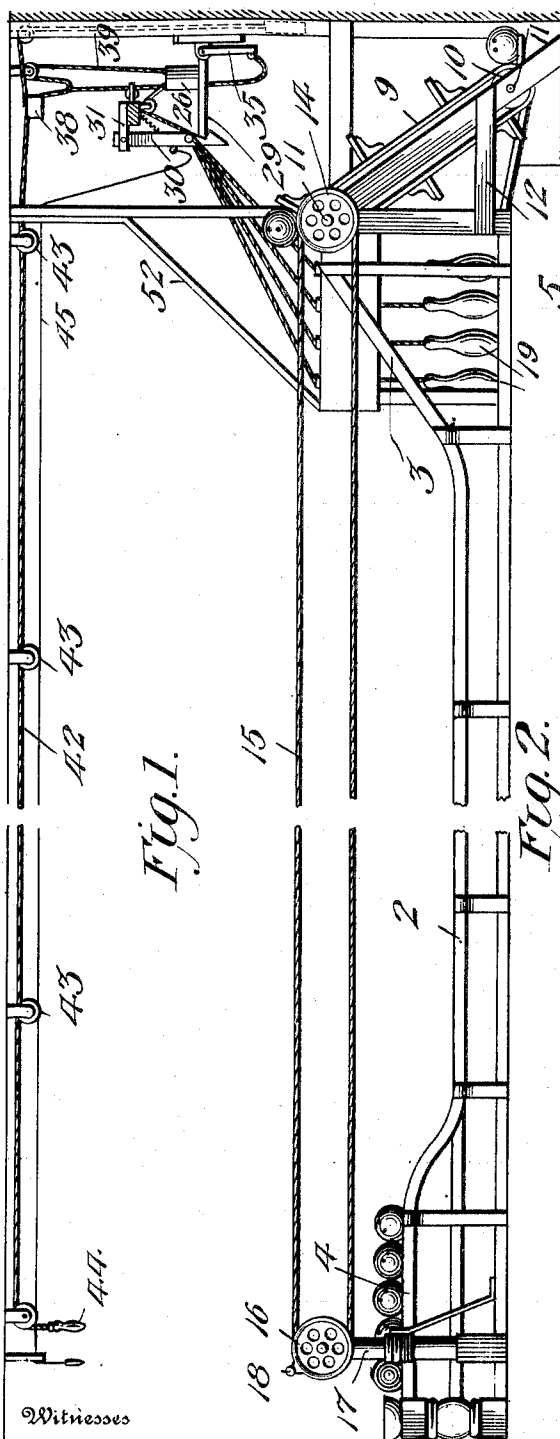


Fig. 1.

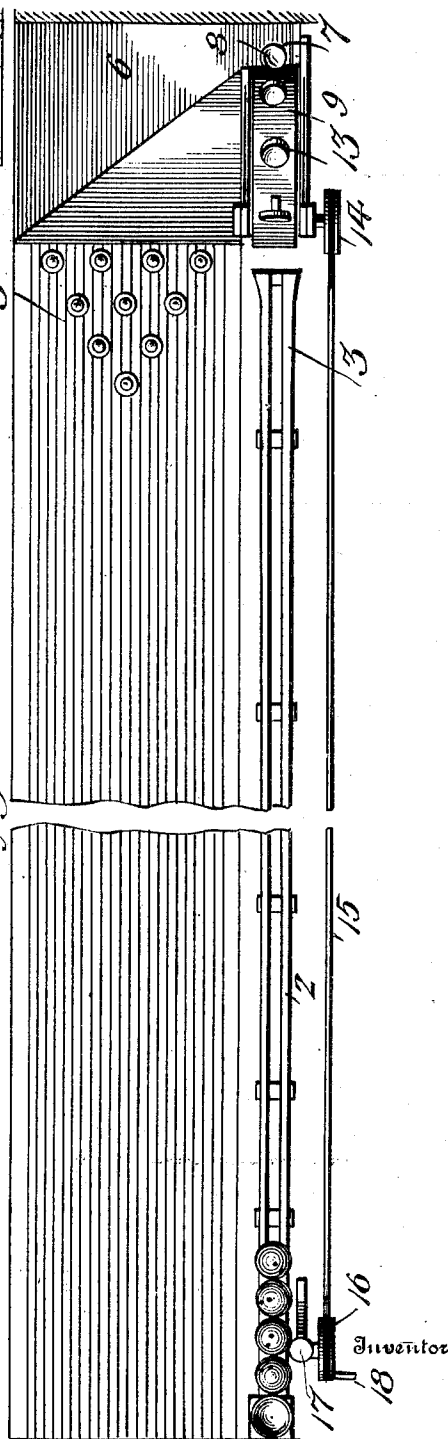


Fig. 2.

Witnesses

Geo. Ackmann  
C. C. Ames.

By

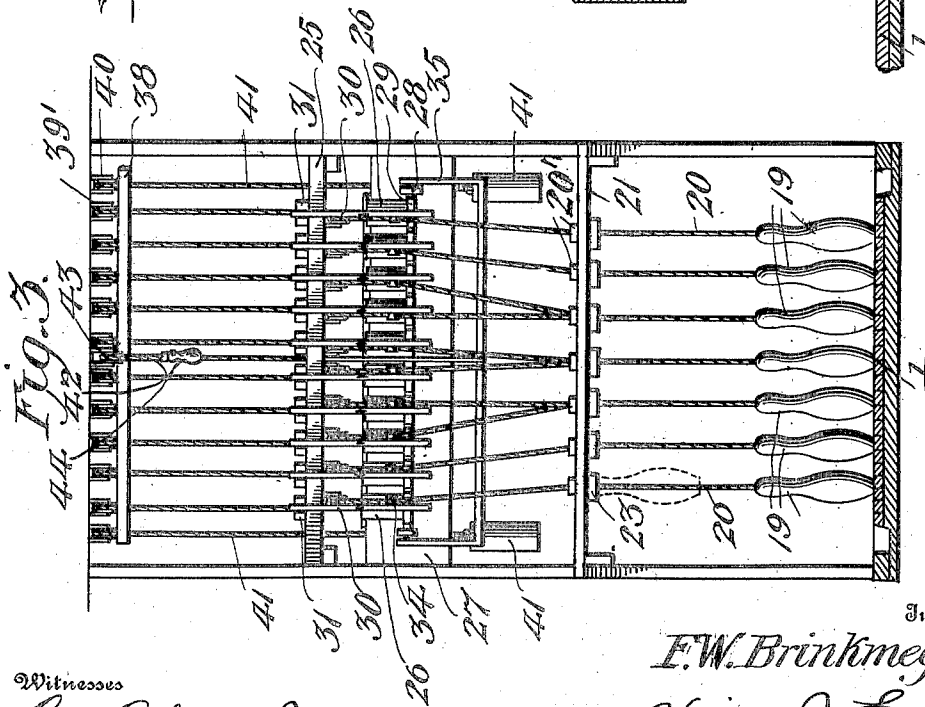
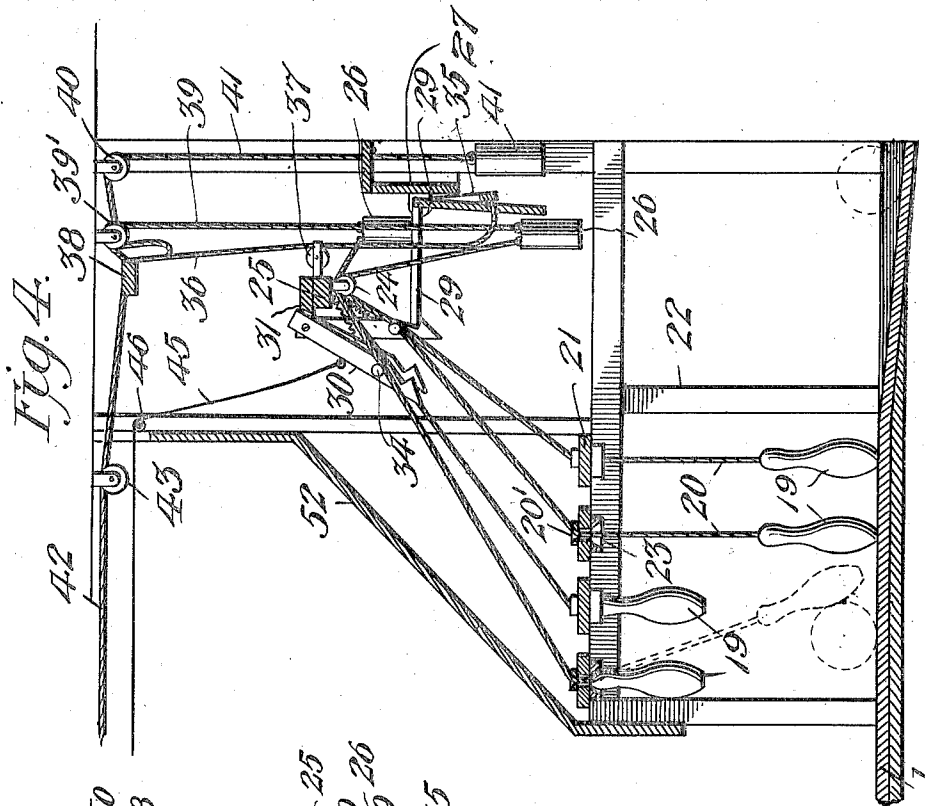
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Witnesses

*Geo. Ackman Jr.*  
*C. C. Hines.*

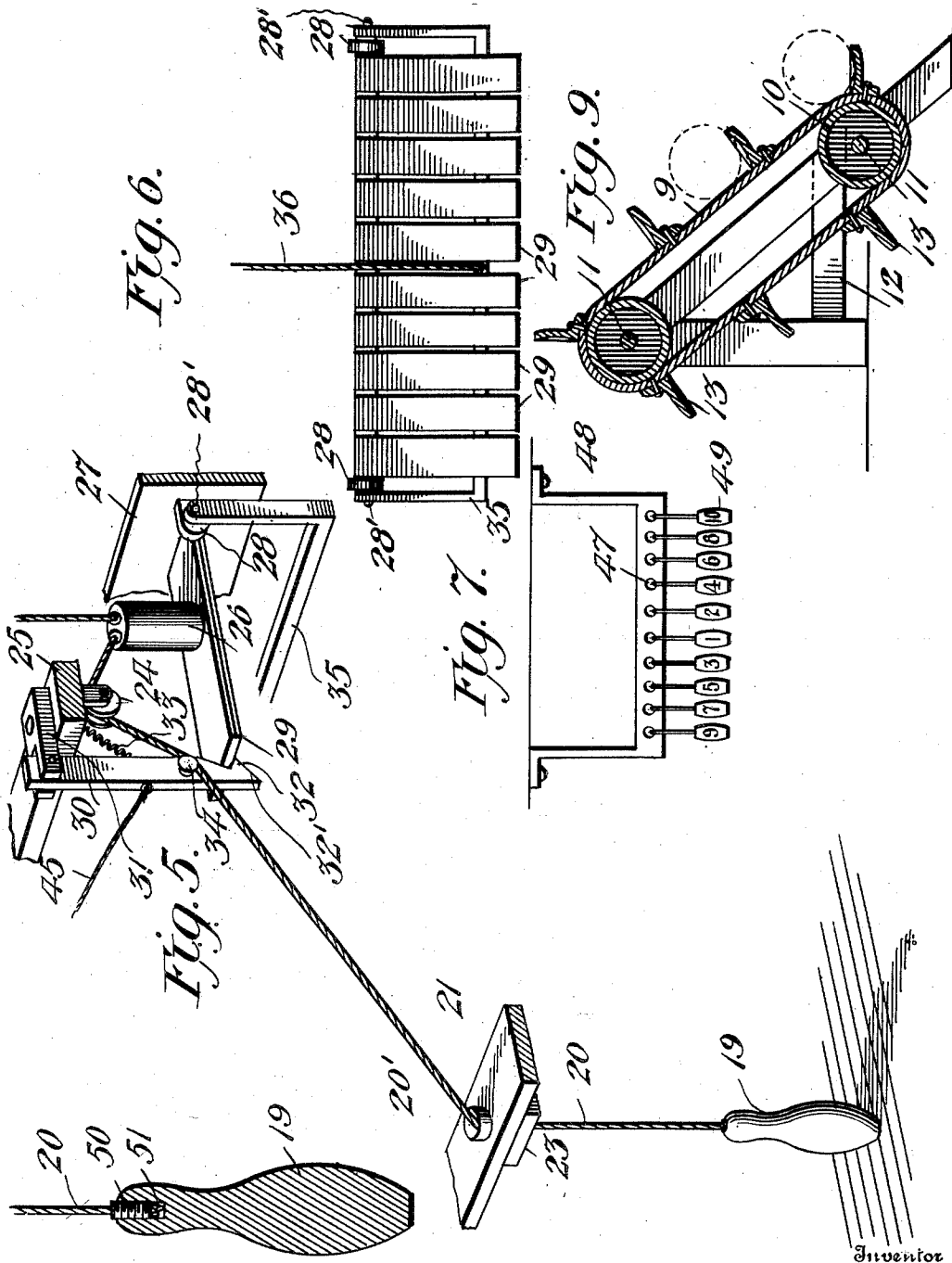
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Witnesses  
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C. C. Hines.

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# UNITED STATES PATENT OFFICE.

FREDRICK WM. BRINKMEYER, OF DECATUR, ILLINOIS.

## BOWLING-ALLEY.

No. 811,476.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed November 17, 1904. Serial No. 233,188.

*To all whom it may concern:*

Be it known that I, FREDRICK WM. BRINKMEYER, a citizen of the United States of America, residing at Decatur, in the county of Macon and State of Illinois, have invented new and useful Improvements in Bowling-Alleys, of which the following is a specification.

This invention relates to bowling-alleys, and particularly to means for setting and resetting the pins of such alleys.

The object of the invention is to provide automatic means for displacing the pins by lifting them to a determined position above the plane of the alley when struck by the balls instead of permitting them to fall over or to be knocked down when struck by the balls; also, to provide means under control of an attendant at the player's end of the alley, whereby the displaced pins may be reset or returned to their normal positions, and, further, to provide means for independently controlling each pin, whereby when the actuating device of any pin fails to operate when the pin is struck by a ball said device may be set into action to raise the pin through the medium of a connection under control of the attendant.

With these and other objects in view the invention consists of the features of construction, combination, and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a view in side elevation of a bowling-alley embodying my invention, showing the position of the parts of the pin-controlling mechanism when the pins are lowered or set for use. Fig. 2 is a top plan view of the alley with the pin-controlling mechanism at the rear of the alley removed to more clearly show the means for raising the balls to the chute portion of the runway. Fig. 3 is a sectional front elevation, the shield at the front of the frame or casing of the pin-controlling mechanism being removed to disclose said mechanism. Fig. 4 is a vertical front-to-rear section through the pin-controlling mechanism and the frame or casing thereof. Fig. 5 is a detail perspective view of one of the pins and the means for raising and lowering or setting the same. Fig. 6 is a top plan view of the sectional trap or supporting-platform for the pin-weights and the yoke for returning the parts of the trap to their normal position. Fig. 7 is a detail front

elevation of the latch or trigger-releasing cords and associated parts at the players' end. Fig. 8 is a detail sectional view of one of the pins, and Fig. 9 is a sectional view of the endless conveyer for raising the balls to the runway-chute.

Referring now more particularly to the drawings, the numeral 1 represents the floor or playing-surface of a bowling-alley which, except as hereinafter noted, may be of ordinary construction, and 2 is the return runway or conductor for the balls provided at its rear end with an inclined chute 3 and at its forward end with a gallery or receptacle 4, adapted to receive and retain the balls in convenient position for use at the front or players' end of the alley. The floor of the alley in rear of the point 5 where the pins are set up slants or inclines downwardly and laterally to provide a chute 6, down which the balls passing the point 5 roll to a pocket 7, disposed immediately in rear of the runway-chute 3. Each ball 8 passing into the pocket 7 is conducted to the chute 3 by means of an endless conveyer-belt 9, mounted for movement on belt-wheels 10, turning on shafts 11, suitably journaled at the upper and lower ends of a supporting-frame 12, said belt being provided with pockets or cups 13 to take up the balls from the pocket 7 and convey the same to the top of the chute 3, from which they travel by gravity to the horizontal central portion of the runway 2 and thence ascend through their acquired velocity to the gallery 4.

On the upper shaft 11 of the conveyer 9 is a belt-wheel 14, which is adapted to receive motion from a belt 15, passing at its forward end around a driving-pulley 16, journaled upon a post or standard 17 alongside the gallery 4, said pulley 16 being provided with an operating-crank 18, by which the belt may be driven to operate the conveyer 9. By this construction of parts the use of an attendant at the rear of the gallery to deposit the balls in the chute 3 is obviated, as the operation of raising the balls may be accomplished by an attendant or any of the players at the front or players' end of the alley.

In the playing of the game the pins 19 are set up, as usual, at the rear portion 5 of the alley 1; but instead of permitting them to fall or to be knocked down under the impact of the balls I provide means for elevating them above the plane of the alley when they are struck by the balls and retaining in them

such position until the player rolling has rolled the allotted number of balls and for lowering or resetting them for subsequent play. To this end each pin 19 is attached at its upper end to the lower end of a cord 20, which extends upwardly through a guide-passage 20' in one of a series of cross-pieces 21, mounted in a frame or casing 22, each of said cross-pieces carrying on its under side a socket 23 to receive the upper end of the pin and retain the same in centered position when the pin is elevated. From the guide-passage 20' the cord 20 extends upwardly and rearwardly, passing over and around a guide-pulley 24, journaled upon a cross-bar 25 on the frame 22, and is secured at its upper rear end to a weight 26, which is proportionately heavier than the pin 9 to raise said pin under the conditions hereinafter described.

Secured to the frame in rear of and below the cross-bar 25 is a supporting-board or bracket 27, from which project ears 28, apertured to receive the ends of a hinge rod or pintle 28', which ends of the rod project beyond the ears. Loosely mounted on the rod between the ears 28 are a series of supporting boards or members 29, comprising the sections of a platform or trap, there being as many of these sections as there are weights 26, which latter correspond in number to the pins 19, each trap-section being adapted to support the weight 26, governing the elevation of each pin at such a height or elevation under normal conditions as to permit the pin to assume its normal or lowered position, with its base resting upon the platform portion 5.

The trap or platform sections 29 are supported in upraised or horizontal position by detents, latches, or triggers 30, one for each section, each latch or trigger being pivoted at its upper end to a bearing-block 31, fixed to the cross-bar 25, and provided at its lower end with a locking lip or hook 32 to engage the outer or free end of the section 29, as clearly shown in Figs. 4 and 5. The latch or trigger is normally retained in engagement with the section 29 by a spring 33, connecting it with the cross-bar 25, and is provided upon one side with a headed laterally-projecting stud or pin 34, which is engaged by the cord 20 in such manner that when the pin 19 is knocked or impelled rearwardly by contact of a ball therewith and the cord 20 drawn forward thereby the said cord upon its forward movement will exert a sharp tug upon the stud 34, and thereby swing the lower end of the latch 30 forward against the resistance of the spring 33 and release the trap or platform section 29, which will fall down and permit the weight 26 to drop. The weight 26 in dropping pulls upon the cord 20 and raises the pin 19, thus removing or elevating each pin struck by the ball, impelled by the player, to a plane above the portion 5

of the alley and out of the way of the remaining pins.

The trap-sections are adapted to be elevated or restored to their normal position by an elevating-frame 35, consisting of a bail or yoke whose front cross-bar or body portion is adapted to bear against the under side of the trap-sections 29 and the free ends of whose sides are pivotally mounted upon the extended ends of the rod 28'. To this frame is attached an elevating-cord 36, passing upward in contact with a direction-pulley 37, mounted upon the rear portion of the cross-bar 25, and secured at its upper end to a bar 38, to which are also attached the upper ends of elevating-cords 39, leading from the weights 26, the arrangement of the said cords 36 and 39 being such that when the bar 38 is moved in a forward direction the several weights will be lifted simultaneously with the elevating-frame 35, which latter will lift the trap or platform sections 29 to their normal position, in which they will be locked by the latches 30, the relative lengths of the cords being such that the weights 26 will move upward in advance of the frame 35, so as to be brought to lie above and upon the platform-sections 29 when the latter are raised to a horizontal position. Each cord 39 is guided by a direction-pulley 39', and disposed in rear of the end pulleys of the series of pulleys 39 are pulleys 40, over which pass cords 41, attached at their upper ends to the bar 38 and at their lower ends to counterbalance-weights 41, which serve upon the elevation of the platform-sections and weights 26 to restore the bar 38 to its normal position.

It will be seen from the construction thus far described that the pins struck by the balls rolled by a player along the alley 1 will be elevated above the plane of the alley by the action of the weights 26 and when the latches or triggers 30 are disengaged and that after a player has rolled the allotted number of balls the pins may be restored to their normal position by a forward movement of the bar 38, which will elevate said weights and platform-sections and reset the parts for further play, the weights 41 serving when this action is completed to reset or restore the bar 38 to its normal position. The bar 38 is operatively connected to the rear end of a flexible cord or connection 42, which passes forwardly over suitably-mounted pulleys 43 above the alley and is provided at its opposite or forward end with a hand-grip 44, located so as to be conveniently operated by a player or attendant at the front or players' end of the alley.

In order to provide for the elevation of those pins which have been struck and moved out of their normal position by the balls, but which have not been struck with sufficient force to release the platform-sections and weights cooperating therewith, which pins should properly be counted in

scoring as points for the player, cords or flexible connections 45 are attached at their rear ends to the individual latches or triggers 30 and thence pass upwardly over a direction-pulley 46 on the frame or casing 22 and forwardly to the players' end of the alley and are extended at their forward ends through guide-openings 47 in a supporting bracket or hanger 48, fixed to the ceiling or a suitable support and terminating at their forward ends in handles or hand-grips 49, arranged so as to be pulled downward at the players' end of the alley to enable the latches to be retracted or withdrawn from engagement with the platform-sections 29 by a player or attendant, so as to permit said sections and the cooperating weights 26 to fall and elevate the pins, these cords or connections permitting of the release of any one of the trap or platform sections, so that those governing the operation of the pins which have been struck but not elevated may be released without interfering with others. Upon the release of the handle 49 of the operative connection 45 the latter will be drawn rearwardly again by the action of the contraction-springs 33 of the connecting latch or trigger 30, which will also restore said latch or trigger to its normal position. Each latch or trigger 30 is provided with a beveled portion 32', disposed below its lip or hooked portion 32, which is adapted to be engaged by the cooperating platform-section when the latter is swung upward to swing said latch outwardly, the latter then slipping into engagement with said section under the action of its controlling-spring 33. The cord 20 may be connected to the pin 19 in any preferred manner. In the present instance I have shown the end of the cord extended through a hollow plug or bushing 50, which is externally screw-threaded to fit within a threaded socket 51 in the upper end of the pin 19, as shown in Fig. 8.

The frame or casing 22 may be of any preferred construction to suit the purpose and may be provided at the front thereof with a board or cover 52, forming a shield to conceal the pin-operating mechanism from view at the front of the alley. The casing may be left open at the rear or on its sides or otherwise constructed to permit ready access to the said pin-operating mechanism to permit the same to be conveniently repaired or adjusted when through any cause the operation of any of the parts thereof is interfered with.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be readily understood, and it will be seen that by the use of the pin-controlling apparatus and ball-returning means as herein set forth the necessity of employing attendants at the rear of the gallery to reset the pins and return the balls is obviated, the arrangement of the operating parts at

the front of the alley permitting the players to conveniently effect these operations by a single attendant to reset the pins and return the balls of a number of alleys in active use.

Changes in the form, proportions, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. In a bowling-alley, the combination of a set of pins, cords connected with the pins, weights connected with the cords, pivoted supports for supporting said weights in elevated position, detents engaging said supports, said detents being connected with the cords and adapted to be retracted thereby when the pins are struck by a ball to permit the supports and weights to drop and elevate the pins, and means for manually retracting any of the detents from the players' end of the alley.

2. In a bowling-alley, pins, operating-weights, cords connecting the pins with the weights, pivoted supports for the weights, latches holding said supports in supporting position, said latches being adapted to be retracted by said cords when the pins are struck by a ball, and means for restoring the weights and supports to their normal position and permit lowering and resetting of the pins.

3. In a bowling-alley, pins, operating-weights, pivoted supports for the weights, latches for holding the said supports in supporting position, connections between the pins, latches and weights, whereby when the pins are struck said latches will be retracted and permit the weights to fall and raise the pins, means for retracting the weights and pivoted supports, and means for manually operating the latches.

4. In a bowling-alley, the combination of a set of pins, weights for elevating said pins, cords connecting the pins with the weights, a trap consisting of a series of sections adapted to support the weights in inoperative position, detents for supporting said trap-sections, said detents being operatively connected with said cords and retracted thereby when the connected pins are struck to retract the detents and permit the weights to drop, and means for lifting the weights and trap-sections in unison to restore the parts to their normal position.

5. In a bowling-alley, the combination of a set of pins, a set of weights for raising said pins, a trap composed of sections supporting said weights, detents engaging the trap-sections to hold them and the weights elevated, and means for retracting said detents when the pins are struck to allow the trap-sections and weights to drop and to cause said weights to elevate the struck pins.

6. In a bowling-alley, the combination of a set of pins, a set of weights for elevating the pins, a trap comprising a series of platform-sections for supporting said weights in elevated or inoperative position, detents engaging the platform-sections to hold them in position to support the weights, and operating connections between the pins, weights and detents whereby the detents will be retracted when the pins are struck by a ball to release the trap-sections and permit the weights to drop and elevate the pins.

7. In a bowling-alley, the combination of a set of pins, a trap comprising a series of swinging sections, pin-elevating weights sup-

ported by said sections, detents engaging the sections and holding them elevated, cords connecting the pins with the weights and operatively engaging the detents to retract the same when the pins are struck by a ball, means for manually retracting the latches, and means for returning the weights and platform-sections to their normal position.

In testimony whereof I affix my signature in presence of two witnesses.

FREDRICK WM. BRINKMEYER.

Witnesses:

W. C. DIMOCK,  
HIRAM JOHNSON.