W. L. FIGENSHU.

BOWLING ALLEY.

APPLICATION FILED MAY 29, 1919.

1,329,235.

Patented Jan. 27, 1920.

4 SHEETS—SHEET 1.

Fig. 1.

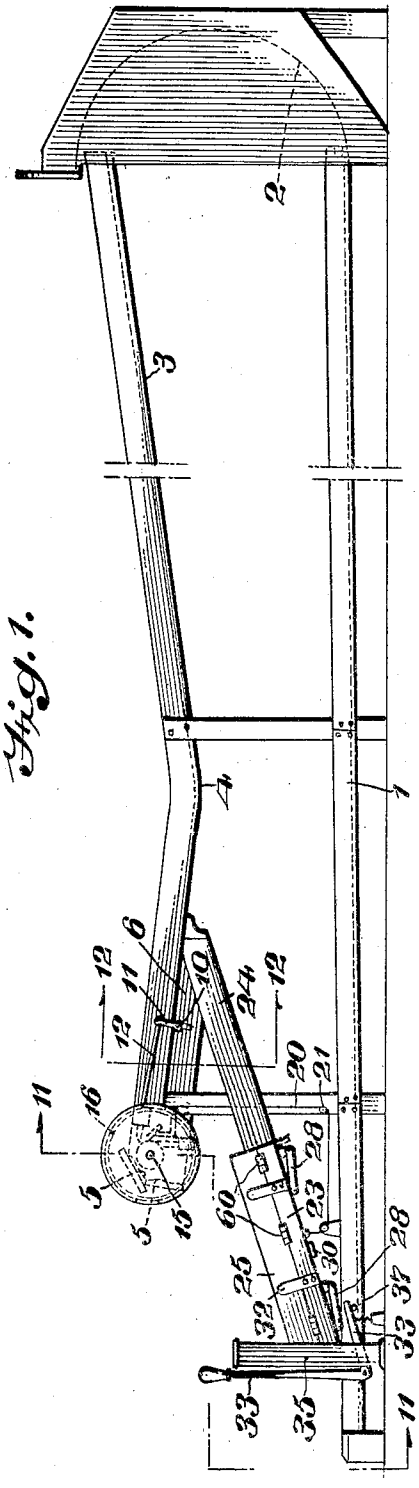
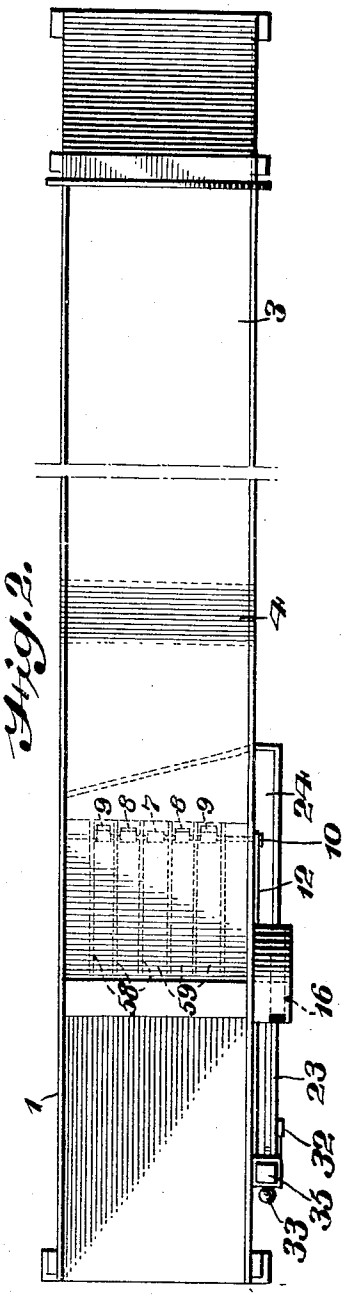


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

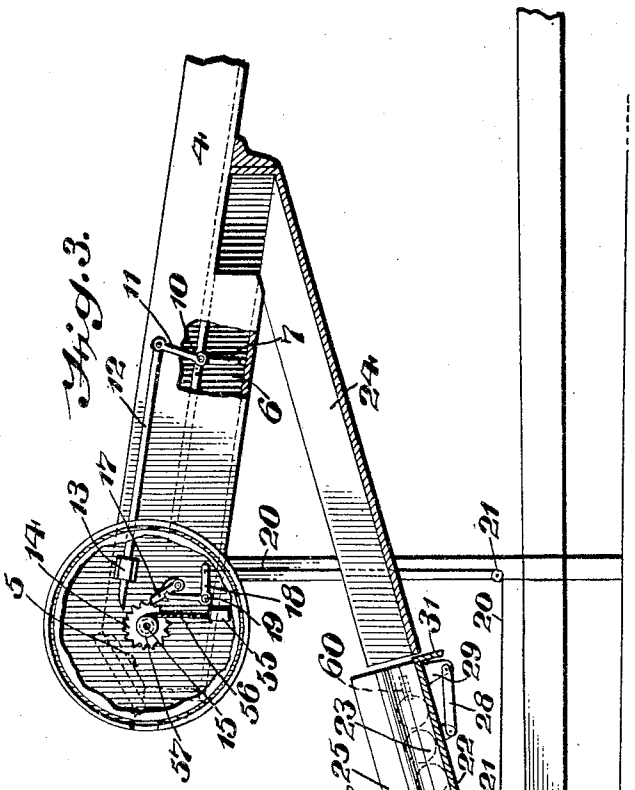
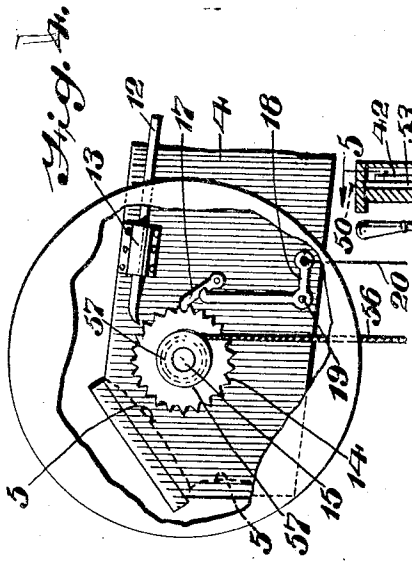


Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

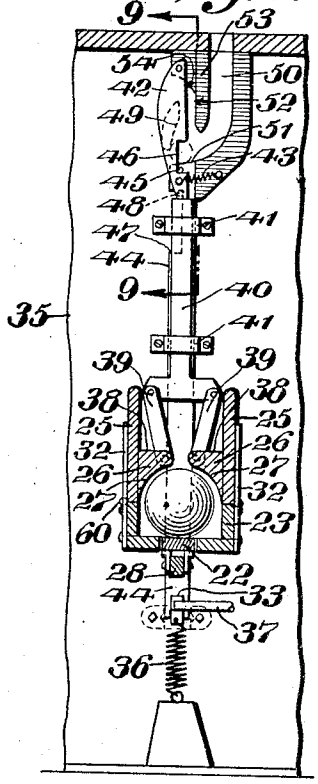


Fig. 6.

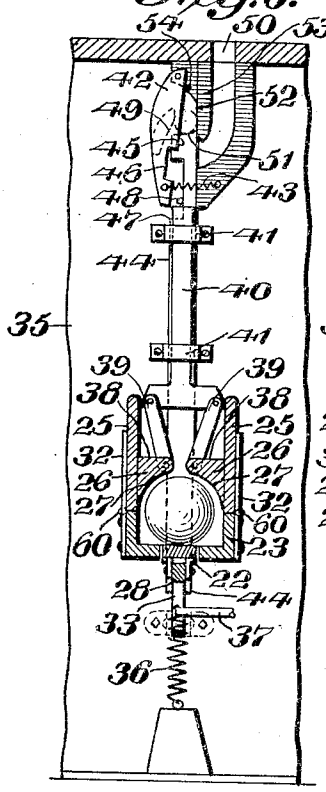


Fig. 7.

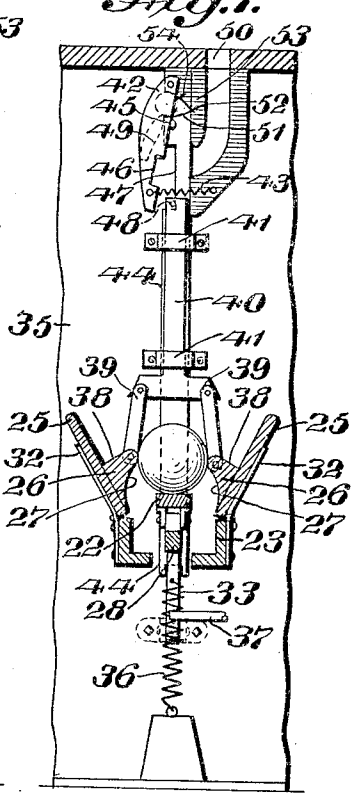


Fig. 8.

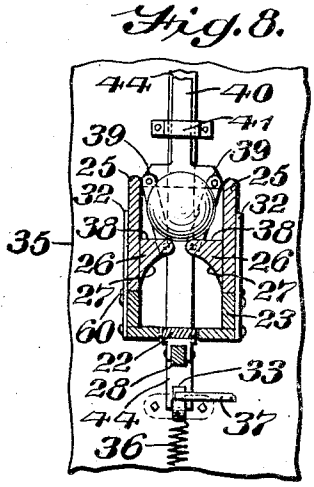


Fig. 9.

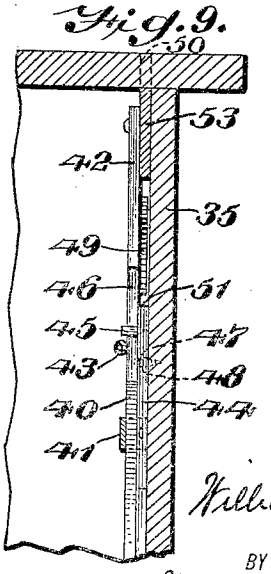
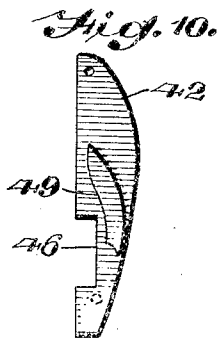


Fig. 10.



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1,329,235.

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4 SHEETS—SHEET 4.

Fig. 12.

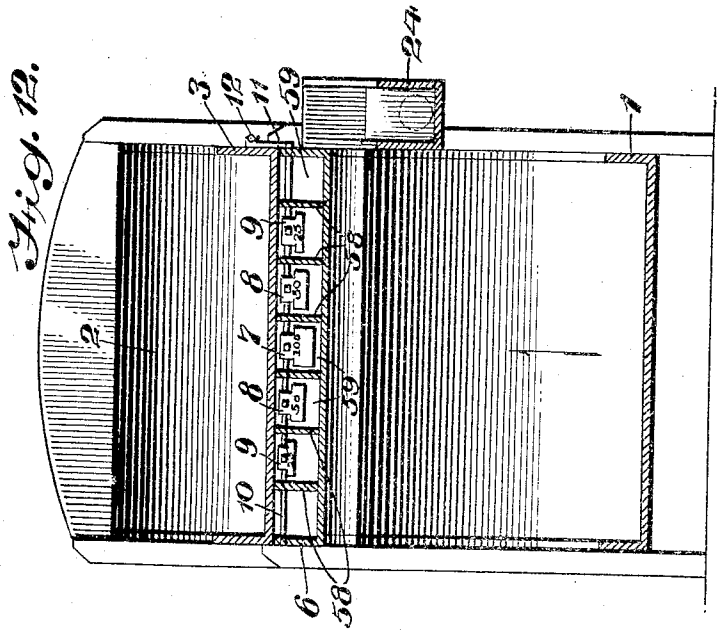


Fig. 13.

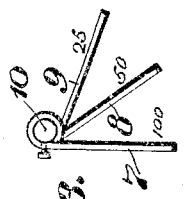
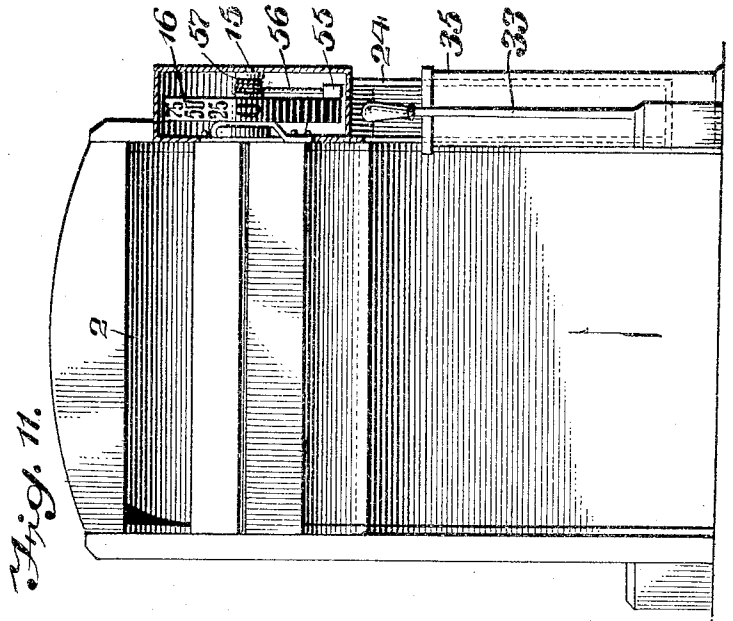


Fig. 11.



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BOWLING-ALLEY.

1,329,235. Specification of Letters Patent. Patented Jan. 27, 1920.

Application filed May 29, 1919. Serial No. 300,616.

To all whom it may concern:

Be it known that I, WILLIAM L. FIGENSHU, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Bowling-Alley, of which the following is a specification.

The object of my present invention is to devise a new type of bowling alley wherein novel means are employed to enable the person who desires to play to have access to the balls upon depositing in the apparatus a check or coin of a predetermined value.

Another object of my invention is to devise a novel construction and arrangement of a registering and indicating mechanism which is automatically actuated.

Other objects and advantages of my invention will hereinafter more clearly appear in the detailed description of my invention.

With the above in view, my invention in its broad and generic scope comprehends a novel bowling alley having a locked compartment to receive the returned balls, and novel means for unlocking said compartment and for bringing the balls into a position accessible to the intending player.

It further comprehends a novel construction and arrangement of registering mechanism which is controlled by the balls during their travel through the alley.

It further comprehends novel means for returning the registering mechanism to zero when a game has been completed.

It further comprehends a novel construction and arrangement of coin controlled mechanism.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating the invention, I have shown in the accompanying drawings a typical embodiment of it which, in practice, will give satisfactory and reliable results. It is, however, to be understood that this embodiment is typical only, and that the various instrumentalities of which the invention consists can be variously arranged and organized, and that the invention is not limited to the precise arrangement and organization of these instrumentalities as herein set forth.

Figure 1 represents, in side elevation, a bowling alley embodying my invention.

Fig. 2 represents a top plan view of my device.

Fig. 3 represents, in side elevation and partly broken away, a front portion of the bowling alley.

Fig. 4 represents, in side elevation and partly broken away, a portion of the registering mechanism on an enlarged scale.

Fig. 5 represents a section on line 5—5 of Fig. 3.

Figs. 6 and 7 represent sections taken on the same section line as Fig. 5, but showing certain of the parts in different relations from that seen in Fig. 5.

Fig. 8 represents a section on the same line as Fig. 5, but showing certain of the parts in a different relation from that seen in said figure.

Fig. 9 represents a section on line 9—9 of Fig. 5.

Fig. 10 represents, in detached position, a portion of the coin chute.

Fig. 11 represents a section on line 11—11 of Fig. 1.

Fig. 12 represents a section on line 12—12 of Fig. 1.

Fig. 13 represents an end view of the blades which are actuated by the return balls to operate the registering mechanism.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings,

1 designates the going alley which initially receives the balls, and which terminates at its rear end in an upturned alley 2, which delivers the balls to a return alley 3, which inclines rearwardly and downwardly to a point 4 and then inclines rearwardly and upwardly. At the front end of the return alley, the balls are discharged against buffers 5 of any desired nature and pass into a rearwardly inclined alley 6 in which are positioned a series of blades 7, 8 and 9, respectively, which are mounted on a shaft 10 to which is connected an arm 11 which is connected to a longitudinally movable pawl 12 which is guided near its forward end in a bracket 13. The pawl 12 actuates a ratchet wheel 14 which is fixed on a shaft 15, to which is connected the dial 16 which carries on its face a progressive series of numbers to indicate the score which is made by the player. A spring pressed detent 17 is provided to engage the ratchet wheel 14 and normally prevent its rearward move-

ment. 18 designates a bell-crank lever pivotally mounted at 19 and having one of its arms adapted to contact with the detent 17 to move it out of engagement with the ratchet wheel. The other arm of the lever 18 has connected to it one end of a cable 20 which passes over rollers 21, suitably supported, and is connected to a movable bottom or ejector 22 of a ball retainer 23, into which the balls are received from the forwardly and downwardly inclined alleys 24, see Figs. 1 and 3, from which it will be understood that the balls enter the alley 6 from the alley 4.

The ball retainer consists of a casing or box having its forward end closed and its rear end open, and is provided with side walls which are fixed to a stationary bottom portion, in which the movable bottom 22 which forms the ball ejector is mounted. The fixed side walls of the ball retainer 23 have connected to them by hinges 60 the side walls 25, which have connected to or formed integral with their inner face the top members 26, which are provided with the lower curved faces 27. The ejector 22 has connected to it the links 28 which are also pivotally connected to the brackets 29 carried by a fixed portion of the ball retainer. A stop member 30 is provided, secured to the fixed bottom portion of the ball retainer to limit the downward movement of the ejector 22. The rear end of the ejector 22 is provided with a depending stop member 31, so that, when the ejector 22 is in raised position, the balls cannot enter the ball retainer from the return alley 24. In order to retain the movable side walls 25 normally in their closed position, I provide the springs 32, the lower ends of which are fixed to the lower fixed side walls of the ball retainer in any desired manner, while the upper ends of such springs bear against the movable side walls 25 to retain them in closed position.

In order to actuate the ejector 22, I provide a lever 33 which is pivotally supported at 34 and has its lower arm extending through a front standard 35. A spring 36 is provided, one end of which is connected to an arm of the lever 33, while the other end of it is connected to a stationary point, so that the tendency of the spring will be to normally retain the lower arm of the lever against a stop 37. If the ball retainer is unlocked, it will be apparent that, when the lever 33 is rocked on its fulcrum, the ejector 22 will be raised, as will be understood by reference to Figs. 5 to 8 inclusive, and the balls will rest on the top faces 38 of the members 26.

In order to prevent any one having access to the balls which have been returned until the intended player has made the proper payment, I preferably provide a coin controlled locking mechanism for the ball retainer, the construction of which will be best understood by reference to Figs. 5 to 10 inclusive and to which attention is now more particularly directed.

The members 26 connected to the movable side walls 25 of the ball retainer are connected by links 39 with a bar 40 guided in brackets 41. The upper end of the bar 40, when the parts are locked, contacts with the lower end of a pivoted plate 42 which is pivotally supported at its upper end, and near its lower end is connected a spring 43 which is also connected with a fixed portion of the device. Vertically slidable in rear of the bar 40 is a bar 44 the lower end of which is bifurcated and contacts with the lower arm of the lever 33. The bar 44 is provided with a pin 45 which is located in the slot 46 so as to limit the amount of movement permitted to the bar 44 when the parts are in the position seen in Fig. 5, and before a coin has been inserted in the device. The bar 44 is recessed as indicated at 47 so that it has limited vertical movement due to the provision of a fixed pin 48. The under face of the pivoted plate 42 is provided with a cam 49 so that when a coin is inserted through the coin chute 50 it will come into the position of the coin seen in dotted lines in Fig. 5.

The upper end of the bar 44 has a curved face 51, so that when it is moved upwardly by the lever 33 the coin will be moved into the position seen in Fig. 6, and the plate 42 will be moved outwardly against the tension of the spring 43, it being seen that the coin engages the straight face 52 of the plate 53 which merges into the outwardly curved face 54. The pin 45 on the bar 44 at this time engages the face of the plate 42 to retain it in the position seen in Figs. 6 and 7, so that the lower end of the lever 33 can raise the ejector 22 sufficiently to progressively move the balls from the position seen in Fig. 5 into the position seen in Figs. 7 and 8, and the lever 33 is returned to its initial position. The balls are now resting on the top faces 38 of the members 36, as seen in Fig. 8, and are in a position accessible to the player.

When the ejector 22 is raised in the manner described, it is apparent that a pull will be exerted on the cable 20 so that the detent 17 will be moved out of engagement with the ratchet wheel 14, and the weight 55 will cause the cable 56 to move downwardly, and, as this cable 56 is fixed to a drum 57 on the shaft 15, the registering mechanism will be returned to its starting position.

As I have before explained, the shaft 10 carries the blades, such as 7, 8 and 9, which are angularly disposed on the shaft 10 in accordance with their respective values, so that the shaft 10 will be proportionately turned in accordance with the value of the

blade actuated by a ball. Any desired number of blades may be employed, but for purposes of illustration. I have shown, as will be understood by reference to Fig. 12, the return alley 6 as provided with partitions 58 which form alleys 59, the outer ones of which are blank, and the others are provided with blades carried by the rock shaft 10.

It will be apparent from the foregoing that, in accordance with my present invention, the blades carried by the rock shaft 10 will be automatically actuated by the balls to cause the indicating mechanism to register the tally to which the player is entitled.

The ball thrown by the player travels down the bowling alley 1, along the upwardly curved alley 2, into the return alley 3 and, striking a bumper 5, is deflected into the return alley 6, and passes into one of the alleys 59, and if it goes through an alley 59 in which a blade is located, the amount earned by the player will be indicated on the dial 16, as is apparent.

The balls, after passing through the alleys 59, pass into the return chute 24, and thence into the ball retainer in which they are inaccessible to the players until the proper payment has been made through the coin controlled mechanism for a predetermined number of balls.

It will now be apparent that I have devised a novel and useful construction of a bowling alley which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment of it which will give in practice satisfactory and reliable results, it is to be understood that such embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a bowling alley, the combination with the going alley and a sectional return alley into which the balls pass from the bowling alley, of means in certain of said sections in the path of the balls, registering mechanism actuated by said means, a ball retainer into which the balls are finally discharged, and devices coöperating with said ball retainer to bring them into a position above the retainer accessible to the player.

2. In a bowling alley, the combination with the going alley and a sectional return alley into which the balls pass from the bowling alley, of means in certain of said sections in the path of the balls, registering mechanism actuated by said means, a ball retainer into which the balls are finally discharged, devices coöperating with said ball retainer to bring them into a position above the retainer accessible to the player, and a connection between said devices and said registering mechanism to return the registering mechanism to zero when said devices are actuated to render the balls accessible.

3. In a bowling alley, the combination with the going alley, of a return alley, a ball retainer into which the balls are discharged from said return alley and provided with a normally closed top, and means to cause the balls in the ball retainer to be positively raised through said top into a position accessible to the player.

4. In a bowling alley, the combination with the going alley, of a return alley, a ball retainer into which the balls are discharged from said return alley and provided with a normally closed top, means to lock said top in closed position, and means to cause the balls in the ball retainer to be raised through said top into a position accessible to the player.

5. In a bowling alley, the combination with the return alley, of a ball retainer into which the balls are discharged from the return alley, an ejector to move the balls out of the retainer into a position above the retainer accessible to the player, and a lever to actuate said ejector.

6. In a bowling alley, the combination with the return alley, of a ball retainer into which the balls are discharged from the return alley, an ejector to move the balls out of the retainer into a position above the retainer accessible to the player, a lever to actuate said ejector, and locking mechanism for said ball retainer.

7. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from the return alley and provided with a sectional top movably mounted, an ejector in the bottom of said retainer, and means to actuate said ejector to cause the balls to open said top and move into a position accessible to the purchaser.

8. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from the return alley and provided with a sectional top movably mounted, resilient means to retain the top section normally in closed position, an ejector in the bottom of said retainer, and means to actuate said ejector to cause the balls to open said top and move into a position accessible to the purchaser.

9. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from the return alley and provided with a sectional top movably mounted, locking mechanism for said top section, an

ejector in the bottom of said retainer, and means to actuate said ejector to cause the balls to open said top and move into a position accessible to the purchaser.

10. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from the return alley, an ejector to eject the balls from the ball retainer and support them in position above the retainer, manually actuated means to operate said ejector, and registering mechanism automatically actuated by the balls passing through said return alley.

11. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from the return alley, an ejector to eject the balls from the ball retainer and retain them in position above the retainer, manually actuated means to operate said ejector, registering mechanism automatically actuated by the balls passing through said return alley, and devices actuated by said ejector to return the registering mechanism to its initial position.

12. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from the return alley, an ejector to eject the balls from the ball retainer and support them in position above the retainer and having means to prevent balls entering the ball retainer during its operative ejecting movement, and manually actuated means to operate said ejector.

13. In a bowling alley, the combination with the going alley and the return alley, of a ball retainer into which the balls are discharged from said return alley, manually actuated ball ejecting means to raise the balls above the retainer, and coin controlled locking mechanism for said ball retainer to prevent the removal of the balls therefrom.

14. In a bowling alley, the combination with the going alley, of an upwardly curved alley communicating with it, a return alley extending downwardly and forwardly from the discharge end of said upturned alley, and then upwardly, then downwardly and rearwardly, and then downwardly and forwardly, a ball retainer into which the balls are discharged, locking mechanism for the ball retainer, and means to effect the removal of the balls from the ball retainer when the locking mechanism is in unlocked position.

15. In a bowling alley, the combination with the return alley having partitions dividing it into sectional alleys, of a rock shaft, blades having different angular adjustments thereon and extending into their respective alleys, a pawl actuated by said rock shaft, and indicating mechanism actuated by said pawl.

16. In a bowling game, the combination with the return alley, of a ball retainer having a movable top, and means to simultaneously eject all of the balls in said retainer and bring them all into a position above the retainer accessible to the purchaser in order that he may select any desired ball.

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Witnesses:
H. S. FAIRBANKS,
OSCAR HEYMANN.