

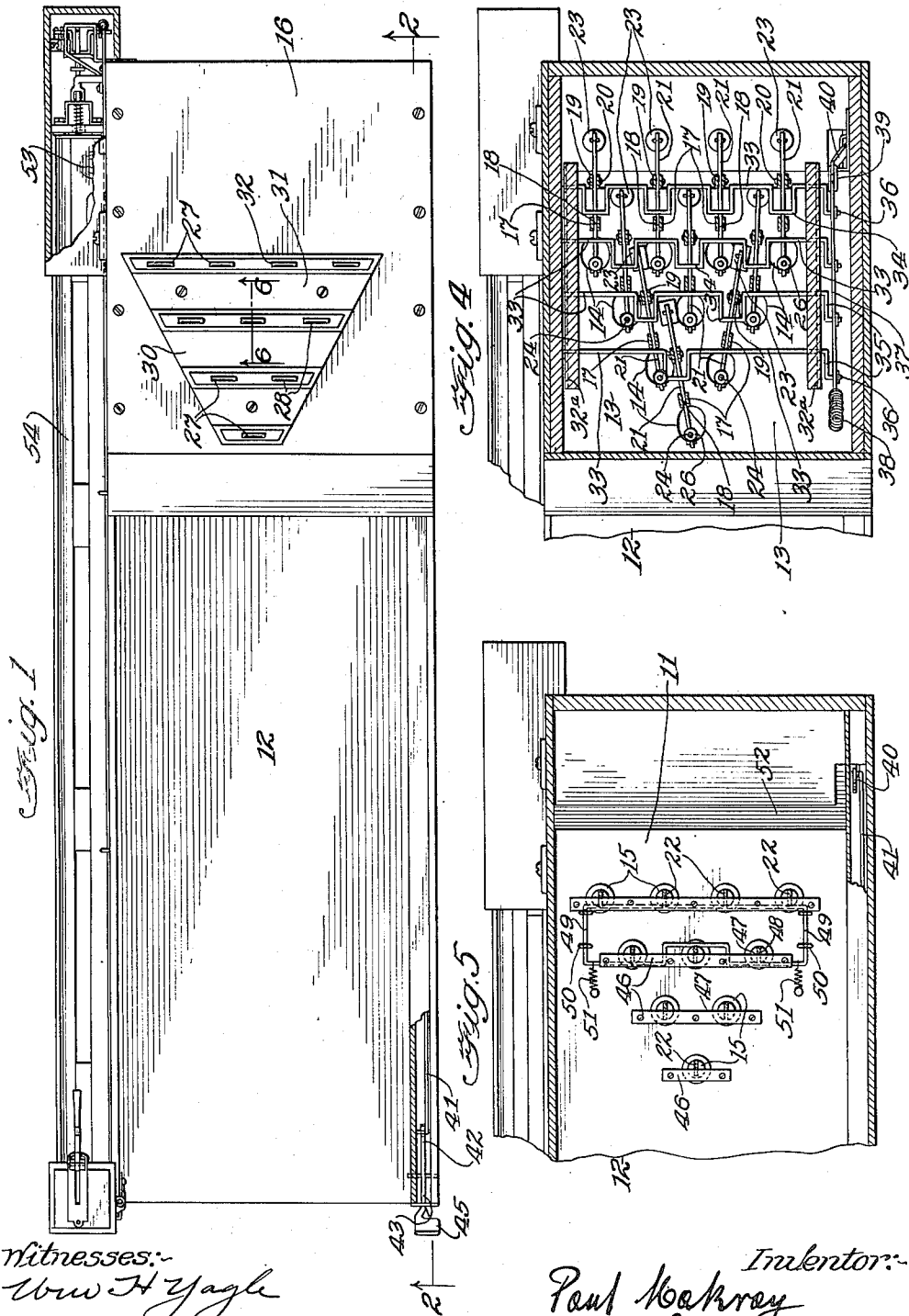
P. MAKRAY.
BOWLING OUTFIT.

APPLICATION FILED AUG. 3, 1912.

Patented Sept. 16, 1913.

3 SHEETS-SHEET 1.

1,073,431.



Witnesses:-
Wm H Zagle
H. M. Matthews

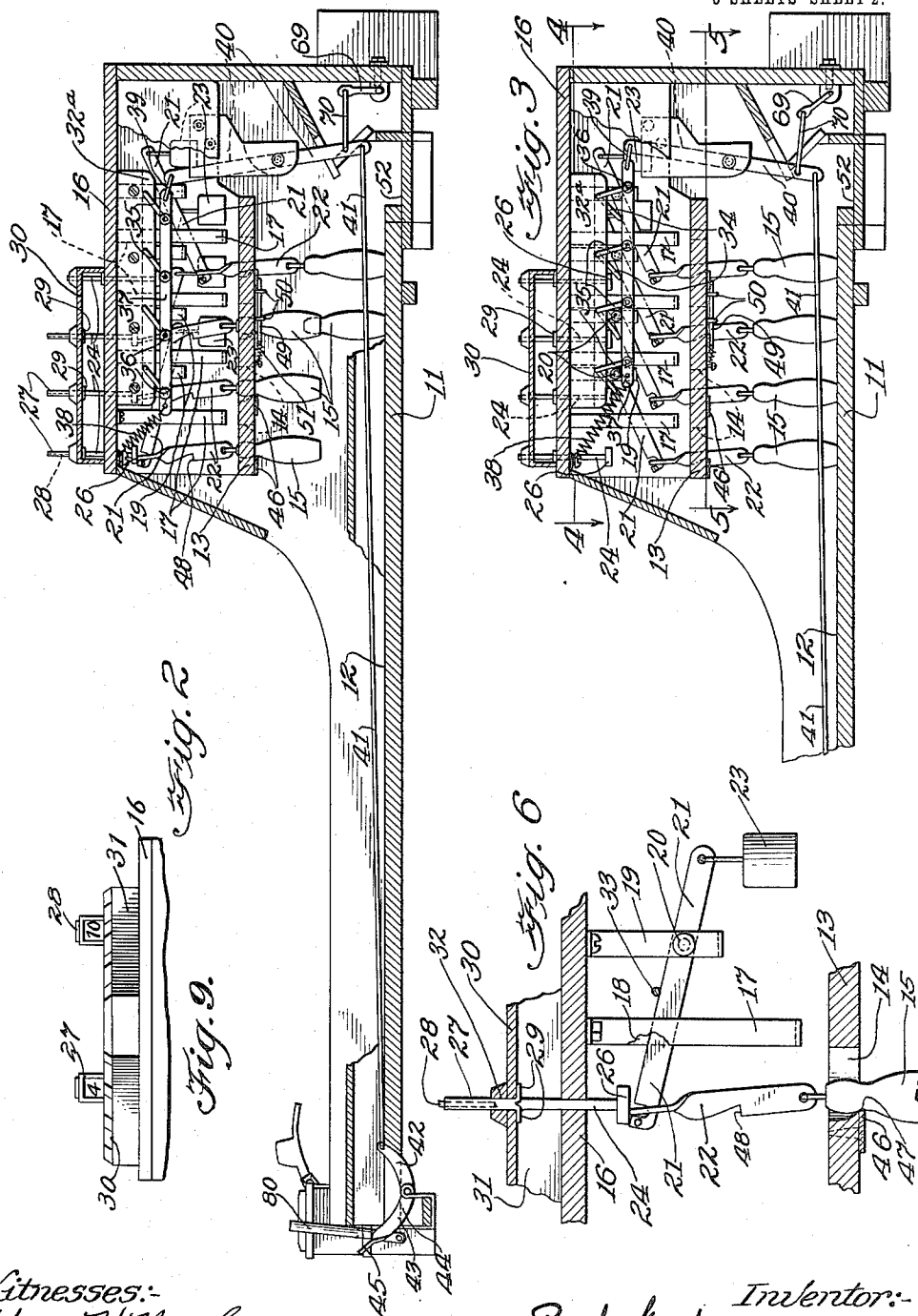
by

Inventor:-
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3 SHEETS-SHEET 2.



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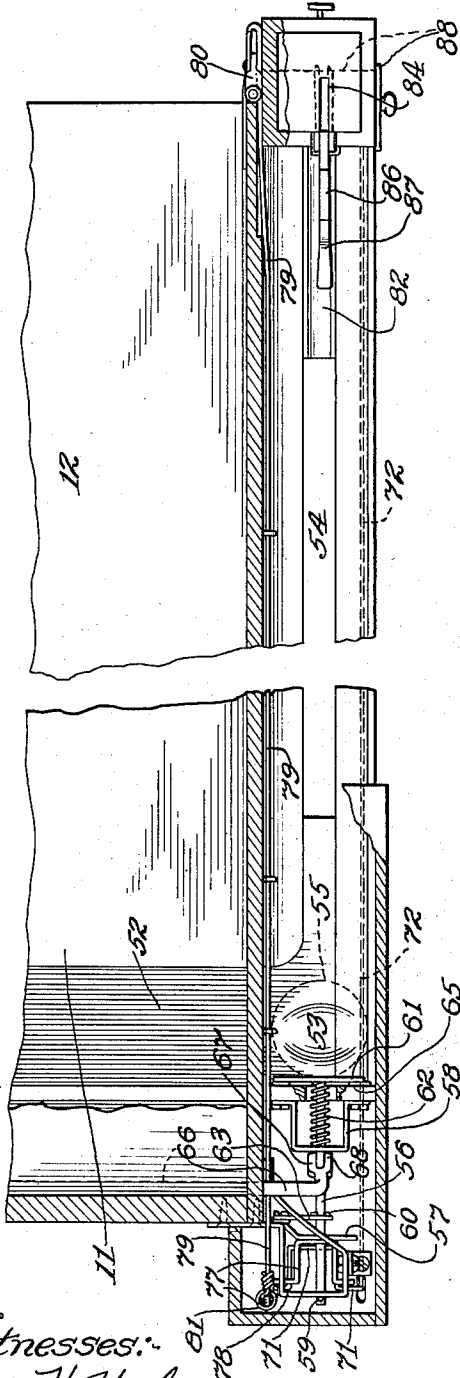
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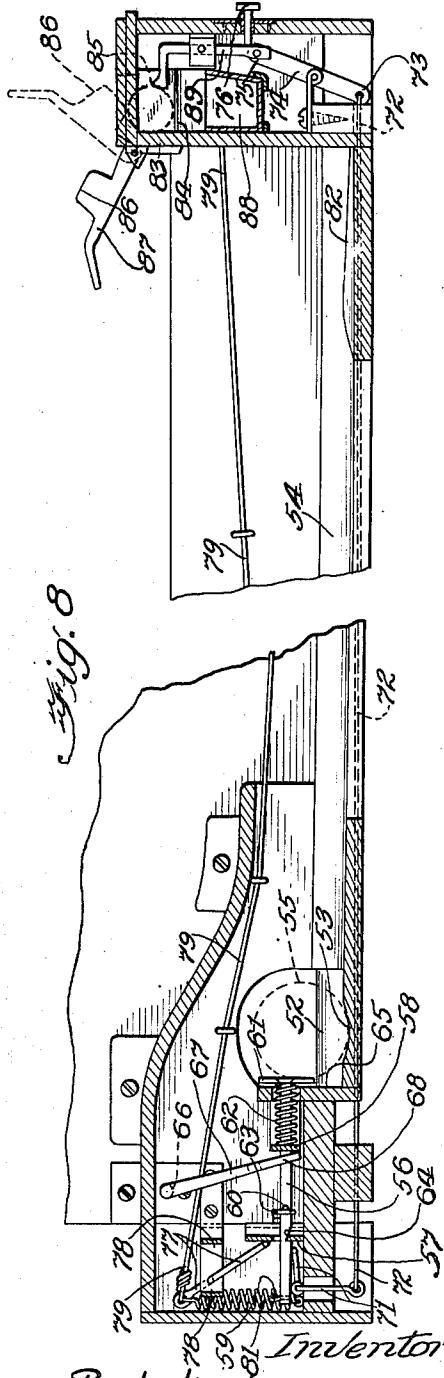
3 SHEETS-SHEET 3.

Fig. 7



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Fig. 8



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UNITED STATES PATENT OFFICE.

PAUL MAKRAY, OF CHICAGO, ILLINOIS.

BOWLING OUTFIT.

1,073,431.

Specification of Letters Patent.

Patented Sept. 16, 1913.

Application filed August 3, 1912. Serial No. 713,169.

To all whom it may concern:

Be it known that I, PAUL MAKRAY, a subject of the Emperor of Austria-Hungary, residing in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Bowling Outfits, of which the following is a specification.

The main object of this invention is to produce a bowling outfit in which the placing of the pins as well as the return of the balls may readily be effected by the players themselves from the players' end of the alley.

In the drawings Figure 1. is a top plan view of my device; Fig. 2. is a sectional side-elevation thereof in the plane indicated by line 2—2 in Fig. 1., with the pin-lowering apparatus in normal position, and part of the pins in raised position; Fig. 3. is a partial similar view with the pin-lowering apparatus in the position occupied at the end of the down-stroke; Fig. 4. is a sectional plan view in the plane indicated by line 4—4 in Fig. 3; Fig. 5. is a like view in the plane indicated by line 5—5 in Fig. 3; Fig. 6. is a sectional side-elevation in the plane indicated by line 6—6 in Fig. 1; Fig. 7. is a partly sectional plan view of the ball returning device; Fig. 8. a partly sectional side elevation of said device, and Fig. 9. is a front elevation of the housing on top of my device with some of the indicators, hereinafter described, projecting therefrom.

Referring to the drawings, the rear-portion 11 of a bowling alley 12, of ordinary construction, is surmounted by a platform 13 provided with vertical openings 14, corresponding in number to the number of bowling pins 15 to be used, and located so as to have the center of their front edges located substantially above the center of the front edges of the corresponding bowling pins, respectively, when the latter are in position on alley 12. At a suitable distance above platform 13 another platform 16 is located, and to the underside thereof are attached vertical guide brackets 17, each preferably consisting of a flat metal strip bent double so as to form a vertical slot 18. One of these brackets is located above the center of the rear edge of each of openings 14. At a suitable distance back of each of brackets 17 there is fastened to the underside of platform 16, a carrying bracket 19, of like construction as guide brackets 17.

In each of brackets 19 there is loosely mounted, on a rivet 20, the lever 21, from the forward end of which is suspended, by means of hanger 22, one of pins 15, while to the rear end of each of said levers 21 is attached a weight 23, heavy enough to lift not only corresponding pin 15, but also corresponding vertical stem 24, and the parts attached thereto, one of said stems being slidably mounted in platform 16, above the front end of each of levers 21. Each of said stems at its lower end is provided with a horizontal disk 26, adapted to be engaged by the front end of corresponding lever 21, and at its upper end carries a frame 27 adapted to hold a removable card 28 in such a manner as to display a suitable figure facing the players' end of alley 12. Horizontal lips 29, formed at the lower edges of frames 27, coöperate with the roof 30 of housing 31, superimposed on platform 16, in limiting the upward movement of frames 27 and stems 24, and thereby also of the forward ends of levers 21, and of pins 15. By contact with the upper surface of platform 16 lips 29 also limit the downward movement of frames 27 and stems 24. Slots 32 in roofs 30 are penetrated by frames 27, permit of vertical sliding motion thereof, and serve to keep the faces of frames 27 toward the players' end of alley 12. Housings 31 are of a height substantially equal to that of frames 27, so that when lips 29 contact with platform 16, cards 28 are entirely within housings 31, thus being concealed from view; while when lips 29 contact with roofs 30, cards 28 are in full view above housings 31.

At a height about equal to that attained by disks 26 when lips 29 are in contact with roofs 30, there are mounted in suitable supports 32^a, transverse rods 33, formed, in front of each of carrying brackets 19 with a projection 34, adapted to depress, when moved downward, the forward end of corresponding lever 21. The ends of rods 33 are bent downward, and then outward, so as to form cranks 35, the ends 36 of which are connected with each other by rod 37, to the front end of which is attached extension spring 38, while its rear end is connected, by a suitable link 39 to the upper end of a vertical lever 40, the lower end of which is connected, by means of a wire 41, with the rear arm 42 of an angular lever 43, the forward arm 44 of which carries

at its outer end a pedal 45 located at the player's end of alley 12. On the underside of platform 16 transverse metal plates 46 are fastened, across the forward ends of openings 14, in such a way that their rear edges 47 are automatically engaged by detent notches 48 in the front edges of hangers 22 whenever the front ends of levers 21 are depressed sufficiently for pins 15 to touch alley 12. There is also attached to the underside of platform 16, a transverse frame 49, preferably mounted in eyescrews 50 in such a way as to be slidable forward and backward, but normally held, by extension springs 51, in its forward position. This frame is arranged so that it passes immediately in the rear of one of pins 15, and in front of a number of other pins 15.

Back of portion 11 of alley 12 a transverse ball chute 52 is arranged, inclined toward, and terminating in, a depression 53 at the rear end of return runway 54, for balls 55.

Just back of depression 53 a propelling device is arranged as follows:—A horizontal bolt 56, mounted in brackets 57 and 58, is provided, at its rear end, with vertical crosspin 59; some distance back of its middle, with horizontal crosspin 60; at its front end, with bufferplate 61; and, between bufferplate 61 and bracket 58, with compression spring 62. A spring 63, pressing down on bolt 56, secures the engagement of locking notch 64, on the underside of bolt 56, with bracket 57 whenever bolt 56 is pushed back, against the pressure of spring 62, sufficiently far to make bufferplate 61 lie substantially flat against the rear wall 65 of runway 54. A suitably mounted transverse rod 66, provided at one end with depending arm 67, terminating in fork 68 which straddles bolt 56 in front of crosspin 60, carries at its other end upright arm 69 (see Fig. 3) which is flexibly connected, by link 70, with the lower portion of lever 40 in such a way that whenever this lower end of lever 40 is pulled forward, by means of wire 41 and lever 43, bolt 56 is pushed back by means of fork 68, acting on crosspin 60. A bellcrank 71 is arranged, and connected, by wire 72, with the lower end 73 of another lever 74, located at the players' end of alley 12, in such a way, that whenever the upper end 75 of lever 74 is pushed back a short distance, by means of pushbutton 76, notch 64 is lifted out of engagement with bracket 57. A lever 77, mounted in a suitable frame 78, is arranged, and connected by wire 79, with lever 80 located at the players' end of alley 12, in such a way that by a pull on the handle of lever 80 bolt 56 may be pushed back, against the pressure of spring 62, by the lower end of lever 77 bearing against crosspin 59. Extension spring 81 is provided to

normally hold lever 77 in a position wherein its lower end bears against bracket 57. A hump 82 is provided in runway 54, near the player's end of alley 12, to prevent a rolling back of balls 55 toward the rear end of runway 54. To end 75 there is connected, in addition to pushbutton 76, the lower end of a lever 89 the upper end 83 of which forms the movable edge of what may be termed an "elastic" coin-chute 84 through which a coin 85 may be forced from above, by means of projection 86 on lever 87, in such a way that in its passage it will force end 83 sufficiently far forward, to cause the lower end of lever 89 to move lever 74 in such a way as to release notch 64 from bracket 57.

The operation of my device is as follows:—Pedal 45 is pushed down. As a result thereof the lower end of lever 40 is pulled forward, and thereby, through link 70 and rod 66, bolt 56 is pushed back until notch 64 engages bracket 57. At the same time, the upper end of lever 40 being pulled backward, rod 37, being connected to lever 40 by link 39, pulls cranks 35 backward, and causes projections 34 to bear down on the forward ends of levers 21, until detent notches 48 engage edges 47. As a result of this movement pins 15 are placed in proper position on alley 12, and stems 24 with frames 27 are caused to drop down until cards 28 are concealed within housings 31. At the end of this movement, pedal 45 being released, spring 38 at once pulls rod 37, and through it cranks 35, projections 34, lever 40, lever 43, arms 69 and 67, and fork 68, back into normal position. A ball may then be thrown by one of the players in the ordinary way. If it hit a pin 15, the corresponding notch 48 is disengaged from the corresponding edge 47, thus permitting corresponding weight 23 to lift such pin 15 beyond the reach of further balls 55, and incidentally to push corresponding stem 24 and attached frame 27 upward until card 28, held by such frame, is fully displayed above its housing 31. Ball 55, having spent its energy, rolls down chute 52 until it rests in depression 53. A push on button 76, or the forcing of a suitable coin through chute 84, will then lift notch 64 out of engagement with bracket 57, thus releasing bolt 56, and causing spring 62 to hurl its forward end with bufferplate 61 against ball 55 in depression 53, thereby propelling said ball along runway 54 and over hump 82 until it rests at the players' end of runway 54. By a pull on the handle of lever 80 bolt 56 is thereupon pushed back, through lever 77, against the pressure of spring 62, until notch 64 again engages bracket 57, whereupon spring 81 pulls levers 77 and 80 back into normal position. Other balls may then be thrown, releasing all pins 15

directly hit by them, and if they hit the pin in front of frame 49, also releasing all of the pins in front of which frame 49 passes. Each ball 55 thrown may be immediately returned by a push on button 76, or the forcing of another coin through chute 84, and the propelling device be made ready for another ball 55 by a pull on the handle of lever 80.

10 At any stage of the playing all of pins 15 may be replaced in position on the rear end of alley 12 by pushing down pedal 45. Whenever this is done the ball-propelling device at the rear end of runway 54 is automatically put in propelling position, and all of frames 27 with cards 28 are automatically dropped back into housings 31, as above described. Cards 28 may be used to indicate either the name or the member of the different pins, or the playing value of each pin struck, or both.

Manifestly lever 89, chute 84 and lever 87 may be omitted; this will be done where the outfit is used for private purposes, or rented by the hour etc. On the other hand push-button 76 may be omitted. This will be done where it is desired to exact payment for every throw; the idea being to use only one ball for playing, and thus to compel the party who wants to use it, to part with the necessary coin before the ball becomes available at the players' end of the alley. The coins in this case will drop into a locked receptacle 88 under chute 84.

35 I claim:—

1. In combination with a bowling alley, a set of suitably mounted levers, each carrying at one end a bowling pin, and at the other end a counterweight adapted to lift the pin at the opposite end; means for lowering the ends of said levers carrying the pins; means for holding said pins in lowered position until disengaged by the strike of a ball thrown on the alley; and vertical rods, carrying indicators, slidably mounted above the ends of said levers carrying the pins.

2. In combination with a bowling alley, a platform above the rear end of said alley, brackets depending from said platform; levers mounted in said brackets, each carrying a pin at one end, and a counterweight at the other end; transverse oscillatable rods provided with extensions for lowering the pin-carrying ends of said levers, and having

cranks; a rod connecting said cranks; means to operate said cranks from the players' end of the alley; and means to hold said pins in lowered position, ready to be disengaged by the strike of a ball thrown on the alley.

3. In combination with a bowling alley, pins, and a return-runway for the balls, a transverse chute to the rear of the pins, inclined toward a depression at the rear end of said runway; a spring-operated buffer located adjoining said rear end, adapted to propel balls from the rear end of said runway to the front end thereof; and means to work said buffer from the players' end of the alley.

4. In combination with a bowling alley, pins, and a return-runway for the balls, a transverse chute to the rear of the pins, inclined toward a depression at the rear end of said runway; a spring-operated buffer located adjoining said rear end adapted to propel balls from the rear end of said runway to the front end thereof; means to retract said buffer, operated from the players' end of the alley; means to releasably hold said buffer in retracted position; and means to release said buffer, operated by pushing a coin through a slot, located at the players' end of the alley.

5. In combination with a bowling alley and a return-runway for the balls, a transverse chute to the rear of the pins, inclined toward a depression at the rear end of said runway; a spring-operated buffer located adjoining said rear end, adapted to propel balls from the rear end of said runway to the front end thereof; means to releasably hold said buffer in retracted position; means for releasing said buffer operated from the players' end of the alley; a set of suitably mounted levers, each carrying at one end a bowling pin, and at the other end a counterweight adapted to lift the pin at the opposite end; means, operated from the players' end of the alley, for simultaneously lowering the ends of said levers carrying the pins, and retracting said buffer; and means for holding said pins in lowered position on said alley ready to be disengaged by the strike of a ball thrown on the alley.

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Witnesses:

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CARL STROVER.