

Jan. 24, 1950

E. W. PECK  
BOWLING GAME COMPRISING AUTOMATIC MEANS FOR SETTING  
UP AND SEPARATING THE BOWLING ELEMENTS

2,495,473

Filed Jan. 9, 1945

3 Sheets-Sheet 1

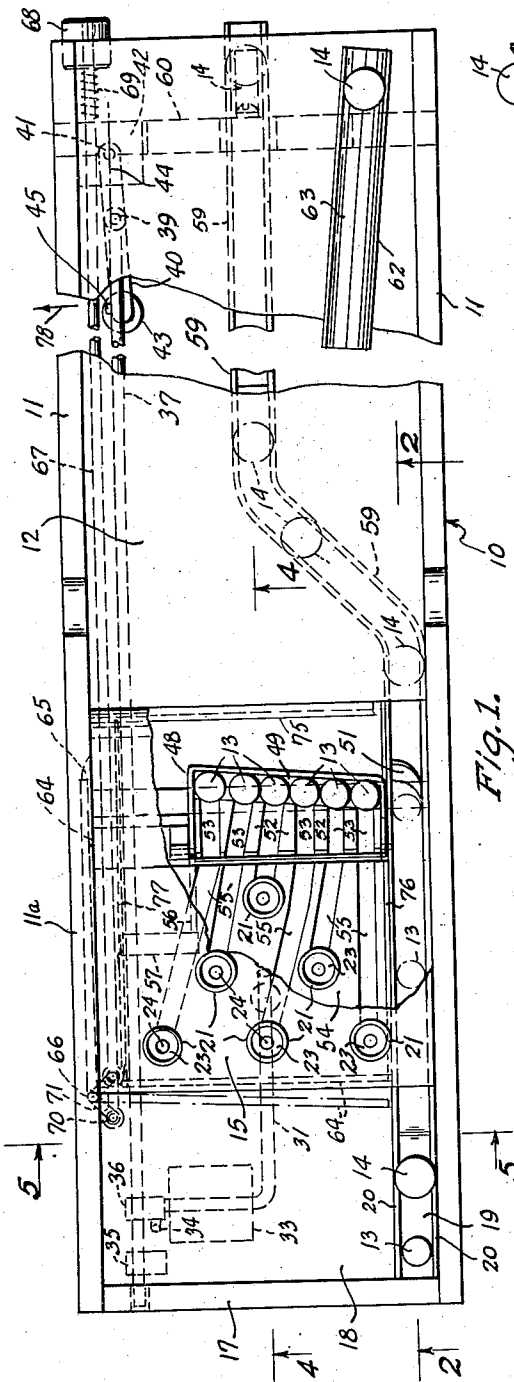


Fig. 1.

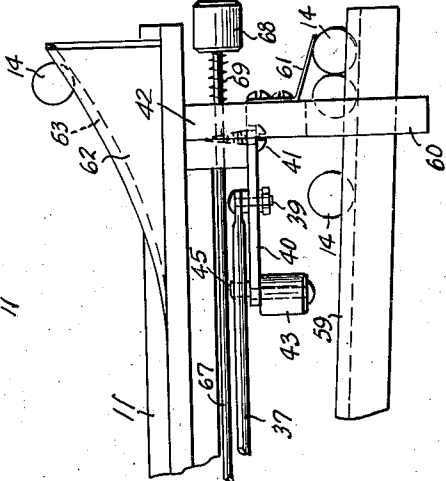


Fig. 2.

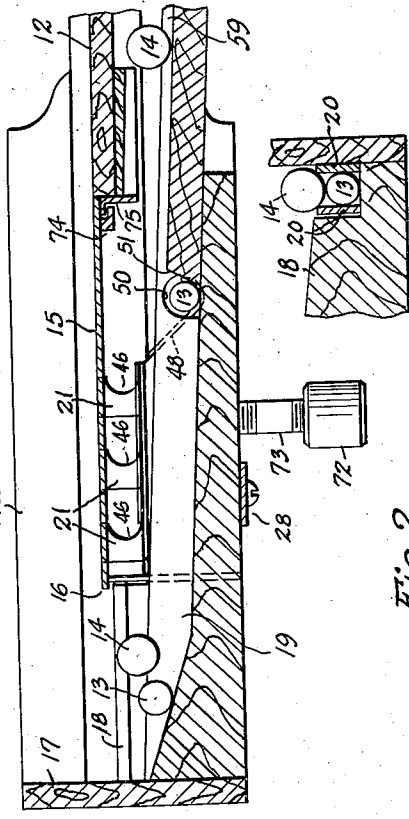


Fig. 3.

INVENTOR  
*Elliott W. Peck*  
BY  
*Mooster & Davis*  
ATTORNEYS.

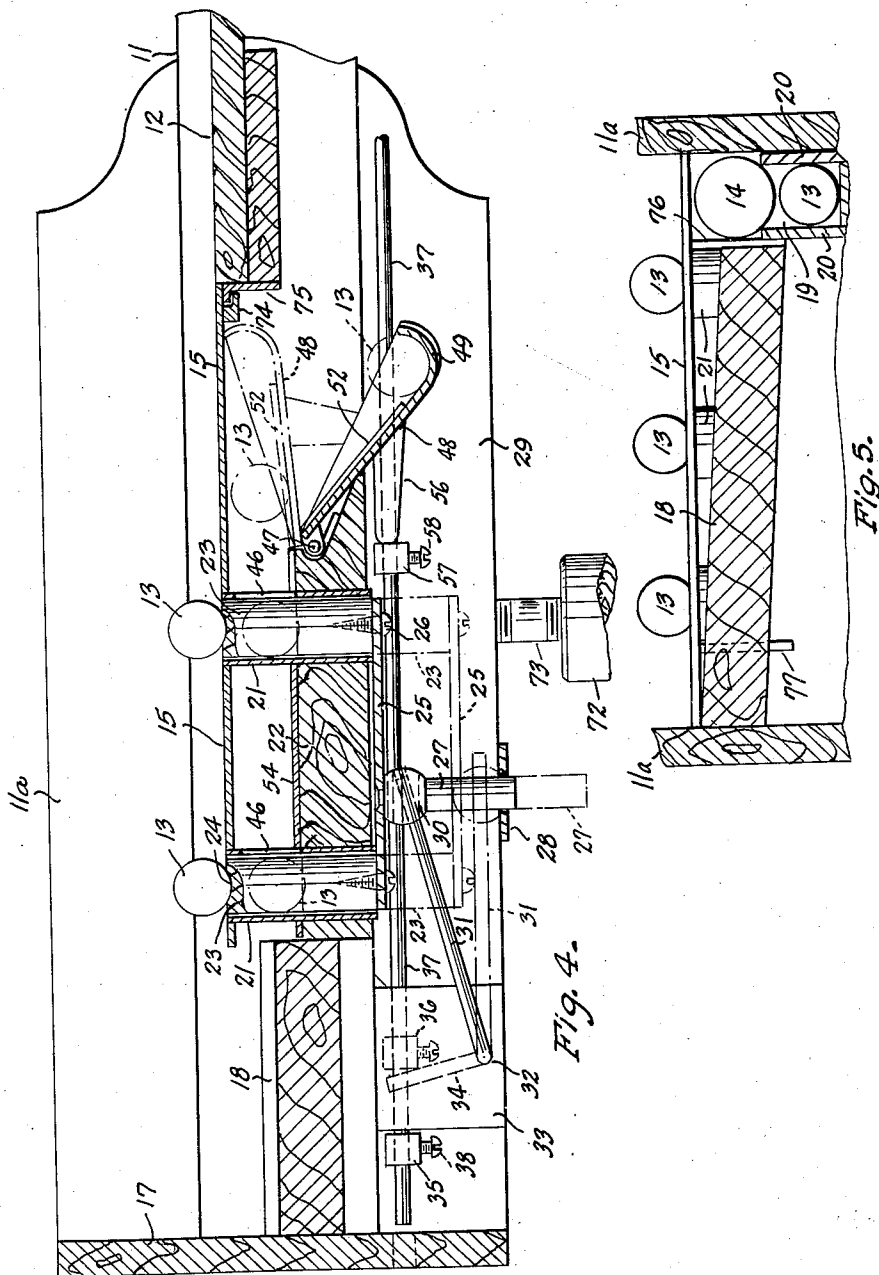
Jan. 24, 1950

E. W. PECK  
BOWLING GAME COMPRISING AUTOMATIC MEANS FOR SETTING  
UP AND SEPARATING THE BOWLING ELEMENTS

2,495,473

Filed Jan. 9, 1945

3 Sheets-Sheet 2



INVENTOR  
Elliott W. Peck  
BY  
Moster & Davis  
ATTORNEYS.

Jan. 24, 1950

E. W. PECK

2,495,473

BOWLING GAME COMPRISING AUTOMATIC MEANS FOR SETTING UP AND SEPARATING THE BOWLING ELEMENTS

Filed Jan. 9, 1945

3 Sheets-Sheet 3

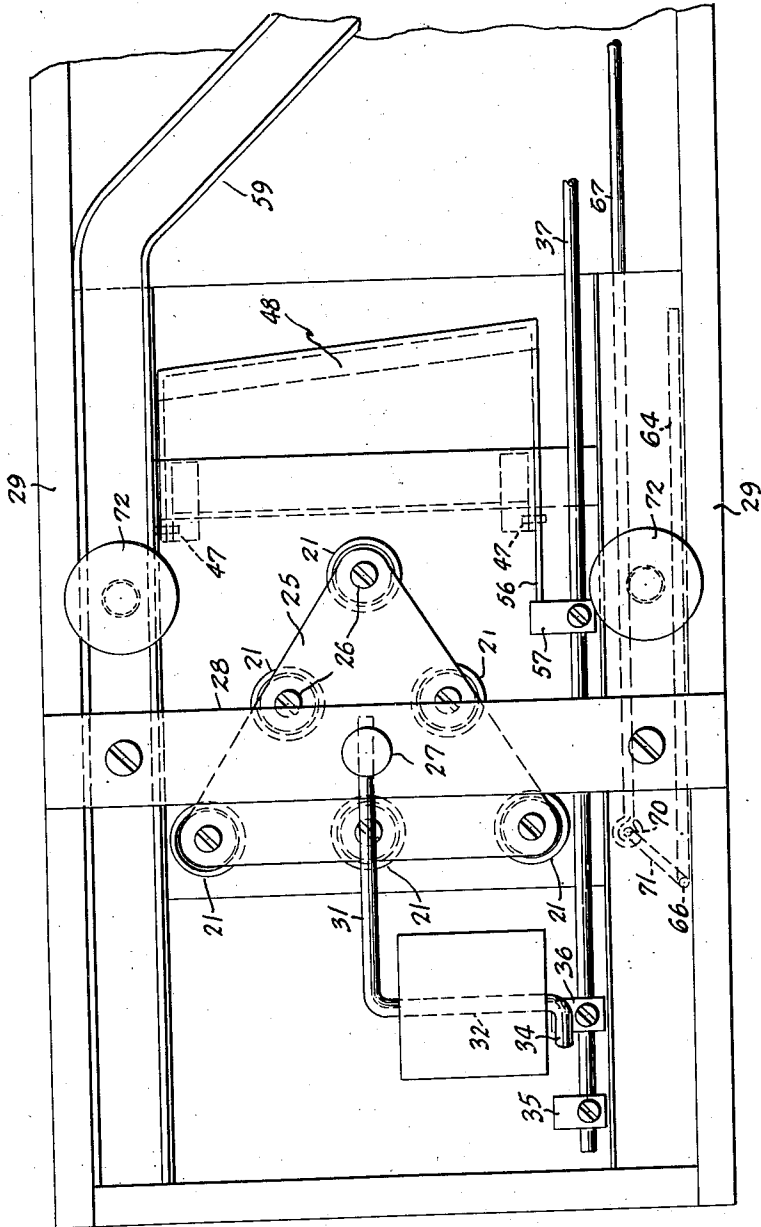


Fig. 6.

INVENTOR  
*Elliott W. Peck.*  
BY  
*Woster Davis*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

2,495,473

## BOWLING GAME COMPRISING AUTOMATIC MEANS FOR SETTING UP AND SEPARATING THE BOWLING ELEMENTS

Elliott W. Peck, Stratford, Conn.

Application January 9, 1945, Serial No. 572,036

9 Claims. (Cl. 273-41)

1

This invention relates to an automatic bowling game, and has for an object to provide a device of this character which will be entirely automatic from the playing end or the bowling position, so that all of the operations of clearing any pin balls left in position after three bowling balls have been played, from the board, and the setting up of pin balls for bowling the next box, may be performed from the bowling end or position. It is also an object to provide a construction and arrangement in which the bowling balls are automatically separated from the pin balls and returned to the playing end, and furthermore to provide a construction and arrangement in which the balls are all automatically and properly distributed without danger of their jamming. It is a further object to provide a construction and arrangement whereby the operations of distributing the pin balls, bringing them to the spotting position and arranging the mechanism so that they are held in the proper spotted position, are all done with a single operation by the player at the playing end or position.

With the foregoing and other objects in view I have devised the construction illustrated in the accompanying drawings forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In these drawings:

Fig. 1 is a top plan view of the device with parts broken away to more clearly show the construction;

Fig. 2 is a partial side view and partial longitudinal section, the section being substantially on line 2-2 of Fig. 1;

Fig. 3 is a detailed section of one side of the pit;

Fig. 4 is a longitudinal section of the pit end of the device on a larger scale and substantially on line 4-4 of Fig. 1;

Fig. 5 is a transverse section substantially on line 5-5 of Fig. 1, and

Fig. 6 is a bottom plan view of the pit end of the device.

The device shown comprises a portable game apparatus to be used in the home, and of course may be made of various sizes as desired. The apparatus is not limited to home use or to a portable device, but is equally applicable to full sized layouts or alleys. The device illustrated is shown for six pin balls to take the place of the usual wooden pins, but of course it may be made to spot ten pin balls to simulate the regular or standard

2

bowling game, as desired, although in such an arrangement the device would be made somewhat larger and both wider and longer. It comprises a trough-shaped body portion 10 comprising the alley with longitudinal side members 11 extending above the bottom 12. At the pit end these sides may be made higher as shown at 11a to prevent the balls jumping off the board. In the model shown a pair of longitudinal gutters are not provided at the opposite sides of the alley portion 12, as used in the standard full-sized alleys; but such gutters may be provided if desired. Instead of using wooden pins, small pin balls 13 are used as they are easier to handle automatically, while larger heavier balls 14 are used for the bowling balls, and these may be made of steel to give greater weight.

At the pit end is a plate 15 on the level with the top of the bottom 12 of the alley; and forming an extension thereof, but its rear edge 16 is spaced from the rear wall 17 to form the pit. This plate is also inclined downwardly somewhat toward the rear, so that any pin balls 13 displaced from their spotted position will roll into the pit. The bottom wall 18 of the pit is inclined laterally, as shown in Fig. 5, so that the balls as they fall into the pit run laterally to one side into a trough or runway 19. This trough is formed by spaced upright side plates 20 for separating the pin balls 13 from the bowling balls 14. For this purpose the plates are spaced somewhat wider than the diameter of the balls 13 so that these balls will fall down into the trough, as shown in Fig. 5, but are spaced less than the diameter of the large or bowling balls 14, so that these balls, instead of falling into the trough, are retained on the top edges of the plates 20 as indicated.

The plate 15 is provided with a series of openings at the spotting positions into which project the upper ends of a series of metal tubes 21, one for each spot or pin ball, and these tubes are inserted and supported in a transverse wall 22 spaced below the plate 15. Mounted in each of the tubes 21 is a cylindrical pin or plunger 23 which may be made of wood, and each has a shallow recess 24 in its upper end. At their lower ends these plungers rest on a vertically movable triangular plate 25 and the plungers may be secured to this plate by any suitable means, such as the screws 26. This plate in turn is mounted on a post 27 slidable vertically and guided in a transverse bar 28 spaced below the wall 22 and mounted on the downwardly extending side walls 29. This post 27 has an enlarged head 30 on which the plate 25 is mounted,

and this head is provided with a transverse opening into which projects the end of the arm 31 of a lever pivoted at 32 in a block 33, the opening being sufficiently larger than the arm to permit the arm to rock on up and down movements of the post. On the opposite side of the block 33 the lever has another arm 34 extending between two stops or blocks 35 and 36 adjustably mounted on the longitudinally extending rod 37. These blocks may be adjusted to any desired position and secured therein by any suitable means, such for example as the set screws 38. This rod 37 extends below the bottom wall of the alley to the front or playing end of the device, where it is pivotally connected at 39 to a lever 40 pivotally mounted at 41 on any suitable support, such as a block 42, and this lever has a hand grip 43 for operating it.

By swinging the hand grip upwardly and to the right, as shown in Fig. 1, the rod 37 is shifted to the right for a purpose presently to be described. When swung to the position of Figs. 1 and 2, the pivotal connection 39 of the rod 37 swings across the center line 44 of the pivot 41 for the lever so as to form a sort of toggle co-acting with stop 45 to retain the lever and the rod in this position against pressure of the rod to the right, and movement of the lever 40 further beyond this center line may be limited by suitable stop means on the lever, such, for example, as the stop 45, engaging the side of the rod. When the lever is swung upwardly and to the right to shift the rod 37 to the right, it will cause the arm 31 and the post 27 to drop, this being assured by stop block 35 engaging lever arm 34, thus permitting the wooden plungers carried by the plate 25 to drop in the tubes 21, so that the tops of these plungers are on a level with the top of the wall 22, as shown in dotted lines Fig. 4. Each tube 21 has an opening 46 in its side wall facing the front for entrance of a pin ball 13 into the tube to rest on top of the plunger 23 therein when this plunger is in its lower position, as indicated in dotted lines Fig. 4, so that when the plungers 23 are raised to the full line position, these pin balls 13 will also be raised to the proper spotted position above the plate 15, as shown in full lines.

Pivoted at the front of the lower wall 22 at 47 is a distributor 48 curved upwardly at its free edge to form a lining-up trough or cradle 49. When the plungers 23 are in their raised or bowling position, this distributor 48 is in its lower or full line position, as shown in Fig. 4, and one end of the trough 49 is in alignment with an opening 50 (Fig. 2) in the side of the runway trough 19. Just forwardly of this opening 50 is an inclined or curved stop wall 51 in this runway trough, so that the pin balls 13 running down the trough or runway will be deflected laterally by this stop wall through the opening 50 into the trough or cradle 49 in the distributor and will line up in this distributor as shown in Fig. 1. To insure this, the trough or cradle 49 is inclined downwardly and the distributor is tapered, as indicated in Fig. 1, and narrow plates 52 are provided on the upper side of the distributor to provide guideways 53 in front of each ball leading to the top of the wall 22. Mounted on this wall 22 is a plate or series of plates 54 forming runways 55, one in alignment with each of the runways 53, and leading to the forward side of each of the tubes 21 under the openings 46 in the side walls thereof, so that when the free or trough end of the distributor 48 is raised

to the upper or dotted line position of Fig. 4, these pin balls 13 lined up in it will each run down one of the guideways 53, 55 and will pass through the opening in one of the tubes 21 to rest on the top of the wooden plunger 23 in this tube, as shown in dotted lines Fig. 4. This distributor 48 is raised to this position when the rod 37 is shifted to the right to lower the plungers 23 in the tubes 21. For this purpose a finger 56 is provided on the distributor 48 resting against a stop block 57 adjustably secured on the rod 37 by any suitable means, such as a set screw 58. When this rod 37 is shifted to the right to lower the plungers 23, this stop 57 pushes on the finger 56 and raises the distributor 48 with trough 49 to the dotted line position, as shown in Fig. 4, and holds it in this position to permit the balls 13 to roll from the distributor through the guides 53 and 55 to their respective positions in the tubes 21 and seat in the shallow recesses in the top ends of the plungers 23. The trough or cradle 49 in the distributor is of proper length so that the balls line up in front of the guideways 53, so that, when the distributor is raised, one ball only will run down each guideway 53 and its continuation 55 to a single tube 21, but it will also insure that there are a sufficient number of balls lined up in the distributor to insure that a ball will roll to each of the tubes 21 when the distributor is raised, to insure that there is a ball on each of the spots. The trough or cradle 49 is inclined downwardly from the entrance end next to the runway 19 so that all of the six or ten balls, whichever it happens to be, are lined up in the distributor. The operator now, by swinging the lever 40 outwardly and to the left as viewed in Fig. 1 to the position shown in Figs. 1 and 2, will force the rod 37 rearwardly or to the left as viewed in these figures. This will shift the stop block 36 to the left, as viewed in Fig. 4, swinging the lever 34, 31 to raise the arm 31 and with it the plate 25 and the plungers 23 to lift them to the full line position of Fig. 4, and raise the pin balls 13 which have been deposited on these plungers to the spotted position at the top of the plate 15. The elements are now in position and the pin balls spotted for the bowling operation.

Beyond the stop wall 51 in the trough 19, this trough or runway is continued as a shallow runway 59 to the forward end of the device and it is carried through the front support 60 in position to carry the bowling balls 14 to a position where they may be readily accessible to the bowler. Suitable means may be provided to retain these balls in the end portion of the runway, such, for example, as a flat retaining spring 61 located over the top of the runway to prevent the balls rolling off the end of the runway, but will readily yield to permit the player to withdraw a ball from the runway for a bowling operation. In bowling, the player may roll the balls down the alley 12 in the usual manner, or a shooter 62 may be used if desired. The shooter shown comprises a triangular shaped block which may be placed on edge on the alley, and its upper side is provided with a curved groove 63 down which the bowling balls 14 may be allowed to roll onto the alley. This gives momentum and direction to the balls, and by placing the shooter as desired the balls may be aimed at any position on the alley.

Means is provided for removing from the spotted position on the plungers 23 any pin balls 75 which may not have been displaced by the bowl-

ing balls in bowling a box of two or three balls. This comprises a wire finger 64 normally out of the way in a recess 65 in one of the side walls 11 of the alley, and pivoted at 66 so that the finger can swing out over the top of the plate 15, as indicated in dotted lines in Fig. 1, and sweep any balls which may be left on the spotted positions into the pit where they will roll down the inclined bottom wall 18 into the trough or runway 19. This finger 64 is operated to perform this operation by means of a rod 67 extending under the bottom wall 12 to the front end of the alley where it passes through the forward support 60, and is provided with an operating hand knob 68. A spring 69 tends to shift this rod to the right, as shown in Figs. 1 and 2, and return the finger 64 to and retain it in the recess 65, and in the retracted position. At its rear end this rod is pivotally connected at 70 to an arm 71 connected with the finger 64, so that pushing of the hand knob 68 and the rod 67 rearwardly, or to the left as viewed in Figs. 1 and 2, will swing the finger 64 across over the top of the plate 15 to sweep any balls into the pit, and then it will be returned to its normal position in recess 65 by the action of the spring 69.

Adjustable supports or legs are provided for the rear end portion of the device so that the device may be properly levelled in setting up for the bowling operation. In the arrangement shown these comprise blocks 72 forming feet threaded on studs 73 which are in turn threaded into the lower side walls of the device. By rotating these blocks the height of these supports may be adjusted to level up the alley. A level, pendulum or some other device may be mounted on this apparatus to indicate when it is level.

To secure the plate 15 in position it may be provided on the underside adjacent its forward end with an L-shaped bar 74 adapted to engage under the overhanging upper flange of an angle member 75, as shown in Figs. 2 and 4. The plate itself may rest upon upright side plates 76 and 77 and be supported at the proper position thereon. The plate 15 is preferably inclined somewhat toward the rear so that any pin ball 13 displaced from its spotted position will roll off the plate into the pit. The plate 15 may be removed by merely lifting its rear end and withdrawing the front securing member 74 from the member 75.

It will be understood from the above that the device may be operated entirely from the bowling end, and it is therefore not necessary to have a separate person to set up the pin balls or to return the bowling balls to this end, nor is it necessary for the player to keep going to the rear end to perform these operations. If the proper number of pin balls are placed in the pit when the lever 40 is swung rearwardly to the left, or the full line position of Figs. 1 and 2, these balls will run down the trough or runway 19 and through the opening 50 in the inner side wall thereof into the trough or cradle 49 in the distributor 48, and will line up therein, as shown in Fig. 1. The operator now, by swinging the lever 40 outwardly and forwardly, as indicated by the arrow 78, Fig. 1, will shift the rod 37 forwardly, causing the plate 25 and the plungers 23 to be lowered, bringing the upper ends of the plungers on a level with the runways 55 leading to the respective tubes 21. At the same time the block 57 carried by the rod 37 acting against the finger 56 will lift the distributor 48 to the dotted line position of Fig. 4, carrying with it the pin balls 13 which have been lined up in the trough 49 of this distributor.

These balls now roll down the respective guides 53 to the runways 55 and into their respective tubes 21 where they seat in the shallow recesses in the ends of the plungers 23. The operator now swings lever 40 outwardly and backwardly to the position of Figs. 1 and 2. This, by shifting the rod 37 rearwardly, and with it the block 36, operates the lever arm 31 to lift the plate 25 and the plungers 23 carried thereby to the full line position of Fig. 4, carrying with them the pin balls 13 which are now at the level of the top of the plate 15 and in the proper spotted position for the bowling operation. Thus the functions of raising the balls to the spotting position and holding them in this position are performed by a simple operation. As the rod 37 was shifted rearwardly, it carried with it the block 57, which permitted the distributor 48 to again drop to the full line position of Fig. 4, in position to receive the pin balls as they are displaced from their spotted positions by the bowling balls into the pit, from which they roll into the trough 19 and back into their positions lined up within this distributor 48. Any pin balls not displaced from the spotting positions after bowling the proper number of balls for each box, are swept into the pit by merely pushing inwardly on the knob 68 to swing the finger 64 across the top of the plate 15. It will be seen these operations of clearing the board and re-setting or spotting the pin balls may be easily and quickly performed, and no other operations are required in spotting the balls. As the trough 19 is open throughout the length of the pit, there is no danger of the balls becoming jammed, but they all readily roll to their proper positions, the pin balls going into the distributor 48 for the setting-up or spotting operation, and the bowling balls running along the runway 59 to a position at the forward end of the alley where they are easily accessible to the player.

Having thus set forth the nature of my invention, what I claim is:

1. A bowling game comprising an alley, a stationary plate forming an extension of the rear end of the alley and provided with openings at the pin spotting positions, vertically movable plungers under the plate each adapted to raise a pin ball through one of said openings and hold it in playing position above the plate, a pit at the rear of the plate to receive displaced balls, means for raising and lowering the plungers including a lever, a rod connected with the lever and extending to the forward end of the alley, a hand lever at said forward end to shift the rod to raise and lower the plungers, a separating means arranged to receive the balls from the pit and separate the pin balls and bowling balls, a pivoted distributor arranged when in a lower position to receive the pin balls from the separator and when in its upper position to direct them to positions on respective plungers when the plungers are lowered, and cooperating means on the rod and distributor to raise the distributor when the rod is shifted to lower the plungers.
2. A bowling game comprising an alley including a stationary plate at its rear end provided with openings at the pin spotting positions, a pit at the rear of the plate, a movable assembly comprising a plurality of vertically movable plungers movable in stationary guides to spotting positions in said openings when in their upper positions, stationary mounting means for said assembly, a trough at one side of the pit comprising means for separating pin balls from larger bowling balls, said pit including an inclined bot-

7

tom wall to direct the balls to said trough, a second assembly comprising a distributor, means mounting the distributor for movement between lowered and raised positions relative to the first assembly, said distributor having a cradle forming means for aligning a plurality of pin balls, means for passing the pin balls from the trough to the aligning means, stationary guides extending from the distributor to the plungers for directing the balls in the distributor to the respective plungers when the plungers are in their lower positions and the distributor is raised, and means operable at the front end of the alley for lowering the plungers and raising the distributor relative to said stationary mounting means and then raising the plungers to spotting position and lowering the distributor.

3. A bowling game comprising an alley including a stationary plate at its rear end provided with openings at the pin spotting positions, a pit at the rear of the plate, two movable assemblies, the first of which comprises a plurality of vertically movable plungers movable in stationary guides to spotting positions in said openings when in their upper positions, stationary means mounting said assemblies, means at one side of the pit for separating pin balls from larger bowling balls, said pit including an inclined bottom wall to direct the balls to said separating means, the second movable assembly comprising a distributor hinged for up and down movements at one side of the plungers and including a cradle when in its lower position located to receive and line up the pin balls from the separating means, stationary runways for guiding the individual pin balls from the distributor to the respective plungers when the plungers are in their lower positions, and means operable at the forward end of the alley for lowering the plungers and raising the distributor relative to said stationary mounting means to permit the balls to run from the distributor to positions on the plungers and then to raise the plungers to bring the balls to playing positions and to lower the distributor.

4. A bowling game comprising an alley including a stationary plate at the rear end thereof provided with openings at the pin spotting positions and with a pit at the rear of said plate provided with an inclined bottom wall, means at the lower side of said wall for receiving balls from the pit and separating pin balls from larger bowling balls, two movable assemblies, the first of which comprises a plurality of vertically movable plungers movable to spotting positions in said openings when in their upper positions, the second movable assembly comprising a distributor including a trough hinged for up and down movements at one side of the plungers and adapted when in its lower position to receive pin balls from the separating means, stationary means mounting said assemblies, a stationary runway extending from the distributor to each plunger, said distributor including means to distribute a single ball only to each runway when in its upper position, and means operable at the forward end of the alley to lower the plungers and raise the distributor relative to said stationary mounting means to cause the balls to roll along the runways to the respective plungers and then to raise the plungers to carry the balls to their playing positions.

5. A bowling game comprising an alley with a stationary plate at its rear end forming an extension of the alley and provided with openings at the pin spotting positions, a pit at the rear of

8

said plate, a separating means arranged to receive balls from the pit and separate the pin balls and larger bowling balls, said pit being formed to direct the balls to said separating means, a stationary wall spaced below the plate, upright stationary tubes extending between the wall and plate in alignment with the openings in the plate and provided with entrance openings in their side walls above said wall, a movable assembly comprising plungers mounted one in each tube and each movable between an upper position with its upper end in an opening in the plate and a lower position with its upper end below the opening in the tube, a second movable assembly comprising a movable distributor at one side of the tubes movable up and down relatively thereto and including means when in its lower position to receive the pin balls from the separating means and when in its upper position to cause the balls to roll therefrom, stationary runways on the wall extending from the distributor to the openings in the tubes, said distributor including means to cause a single ball only to roll into each runway, and means for lowering the plungers and raising the distributor relative to said wall and plate to cause the balls to roll from the distributor to positions on the respective plungers in the tubes and then to raise the plungers to bring the balls to their playing positions at the top of the plate.

6. A bowling game comprising an alley, a stationary plate forming an extension of the alley at the rear end thereof and provided with openings at the pin spotting positions, a stationary wall spaced below the plate, a pit to the rear of the plate, stationary upright tubes extending between the wall and plate in alignment with said openings and each provided with an entrance opening in its side wall between the wall and plate, stationary runways on the wall leading one to each entrance opening, a vertically movable assembly comprising a plunger mounted in each tube and movable between an upper position with its upper end in the corresponding plate opening and a lower position with its upper end below the tube opening, a second movable assembly comprising a pivoted distributor at one side of the tubes and movable independently thereof, said distributor adapted when in an upper position to direct a pin ball to each runway, a separator at one side of the pit to receive the balls therefrom and adapted to separate the pin balls and larger rolling balls and direct the pin balls to the distributor, and means operable at the forward end of the alley to lower the plungers and raise the distributor relative to said tubes and runways to seat pin balls on the plungers and then to raise the plungers to locate the balls in their playing positions at the top of the plate.

7. A bowling game comprising an alley, a stationary plate forming an extension of the rear end of the alley and provided with openings at the pin spotting positions, movable plungers under the plate, stationary means guiding the plungers for up and down movement only and each plunger adapted to raise a pin ball through one of said openings and hold it in playing position above the plate, a pit at the rear of the plate to receive displaced balls, a separating means arranged to receive balls from the pit and separate the pin balls from larger rolling balls, a distributing means mounted for up and down movement independently of the plunger guiding

means and arranged to receive pin balls from the separating means when in its lower position, means for raising and lowering the distributor, stationary guide means arranged to receive the balls from the distributing means and direct them one to each plunger when the distributor is in its upper position and when the plungers are in their lower positions, and means operable from the forward end of the alley to raise the plungers and balls to position the balls in their playing positions.

8. A bowling game comprising an alley, a stationary plate at the rear end of the alley provided with openings at the pin spotting positions, a stationary pit at the rear of the plate to receive displaced balls, a stationary separating means arranged to receive balls from the pit and separate the pin balls from the larger bowling balls, said pit being formed to direct the balls to the separating means, a runway adapted to receive the bowling balls from the separating means and extending to a position at the forward end of the alley to carry the balls to said end, a distributing means arranged to receive the pin balls from the separating means and position them one under each opening, comprising stationary upright guides, movable ball supporting plungers in said guides, a distributor mounted to move relative to said guides to receive pin balls from the separating means and direct them one to each guide and onto the plunger therein, and means operable from the forward end of the alley to raise the plungers to pass the pin balls through said openings and retain them in their playing positions at the top of the plate.

9. A bowling game comprising an alley, a stationary plate forming an extension of the rear end of the alley and provided with openings at

the pin spotting positions, a movable assembly comprising vertically movable plungers under the plate each adapted to raise a pin ball through one of said openings and hold it in playing position above the plate, stationary guides for said plungers, a stationary pit at the rear of the plate to receive displaced balls, means for raising and lowering the plungers in said stationary guides, means at the forward end of the alley for controlling said first means, a separating means arranged to receive the balls from the pit and separate the pin balls and larger bowling balls, a second movable assembly comprising a pivoted distributor mounted for up and down movement relative to said guides and arranged when in a lower position to receive the pin balls from the separator, stationary guide means between the distributor and guides arranged to receive the balls from said distributor when in its upper position and to direct them to positions on respective plungers when the plungers are lowered, and means cooperating with the plunger operating means to raise the distributor when the plungers are lowered to cause the balls to move from the distributor to the plungers.

ELLIOTT W. PECK.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
693,382	Downey	Feb. 18, 1902
904,400	Brenneman	Nov. 17, 1908
1,806,274	Williams	May 19, 1931
2,248,316	Weber	July 8, 1941