

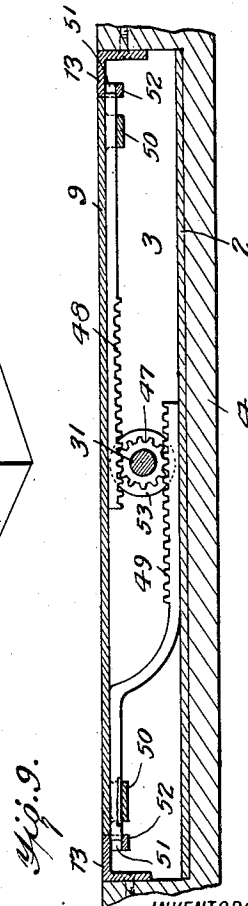
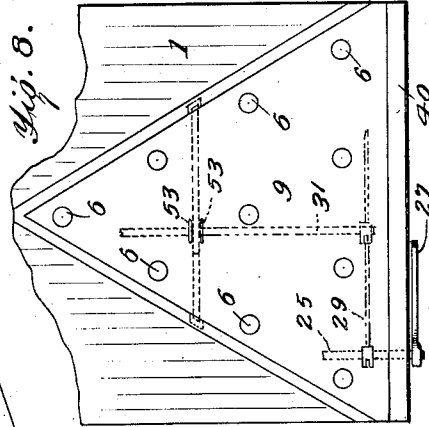
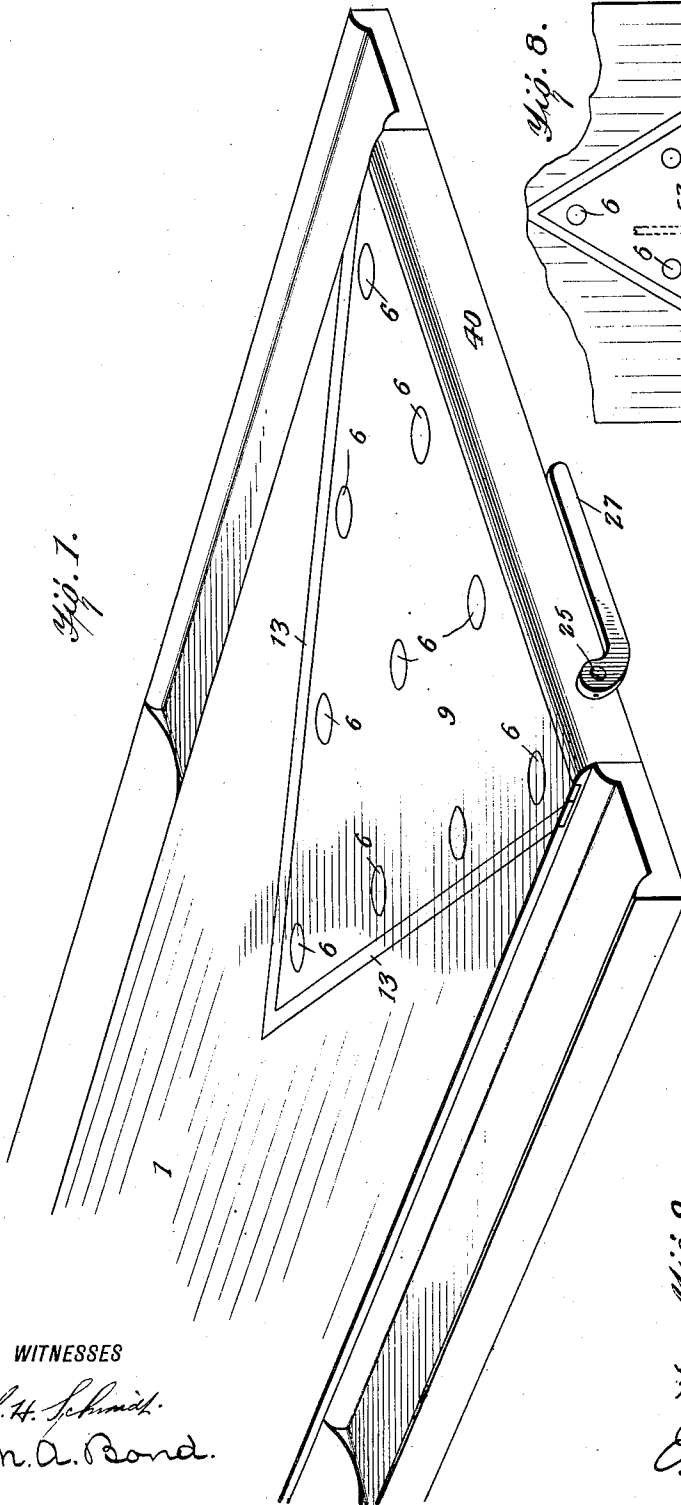
G. S. LEWIS & W. M. FARROW, JR.
PIN SPOTTER.

APPLICATION FILED SEPT. 24, 1909.

Patented Apr. 19, 1910.

955,416.

4 SHEETS—SHEET 1.



WITNESSES

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4 SHEETS—SHEET 2.

Fig. 2.

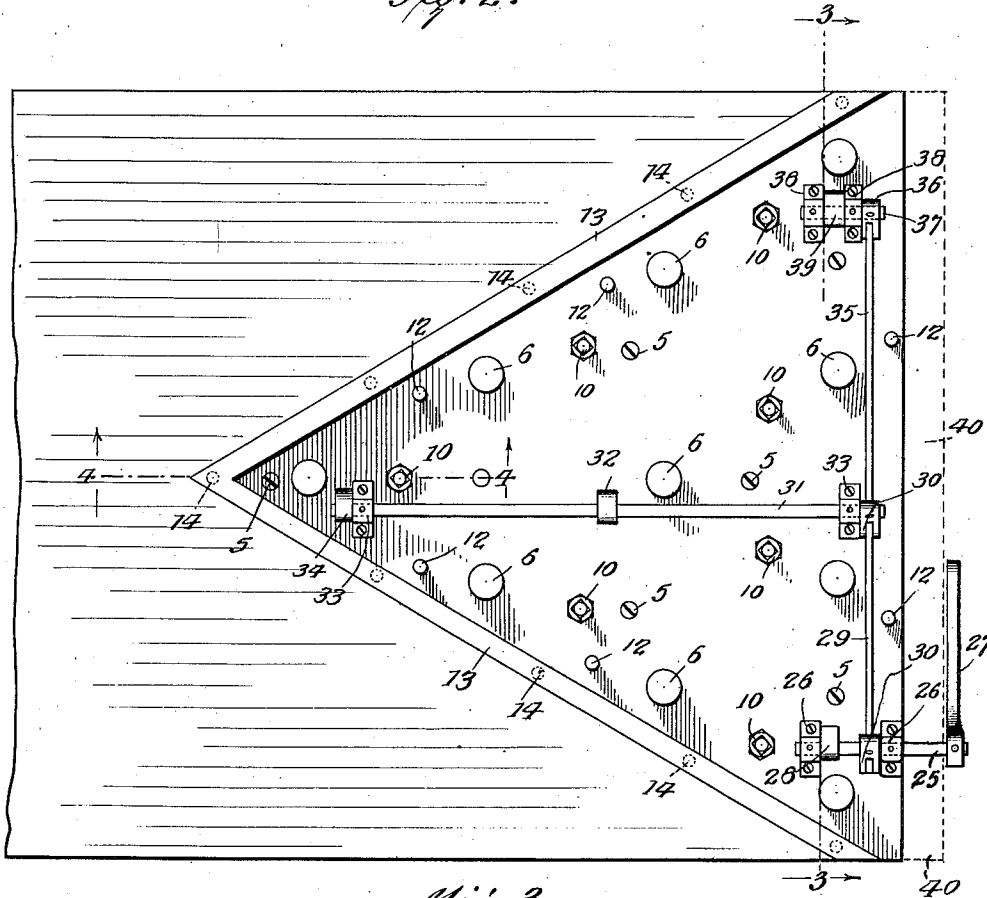


Fig. 3.

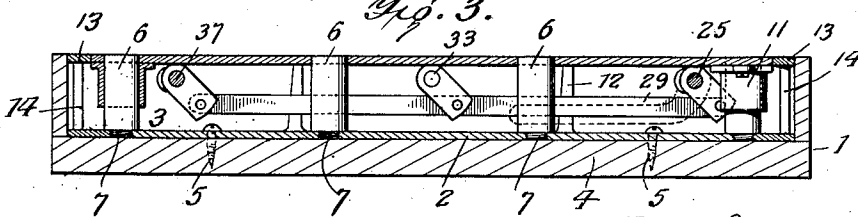
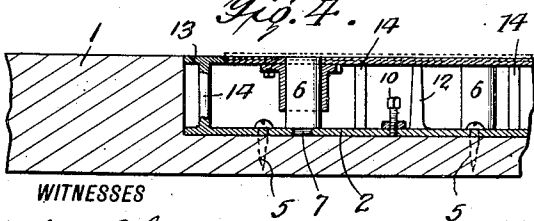


Fig. 4.



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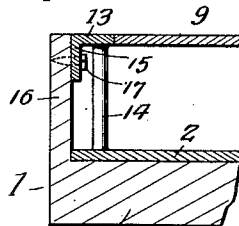


Fig. 10.

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4 SHEETS—SHEET 3.

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Fig. 5.

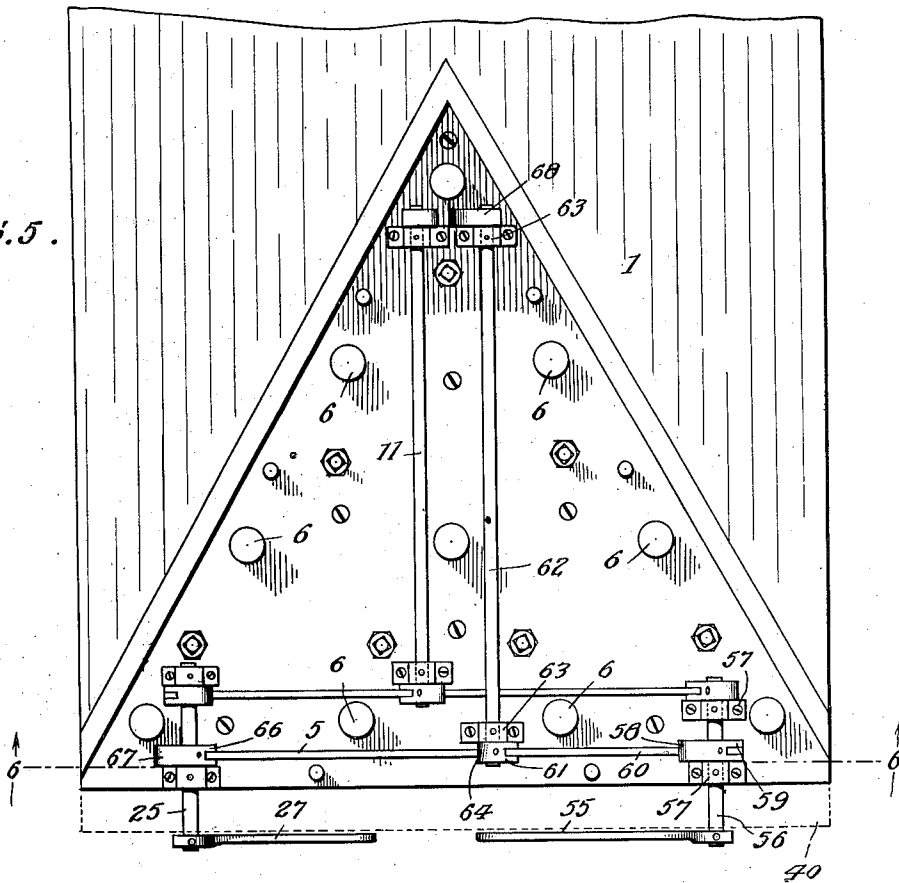


Fig. 6.

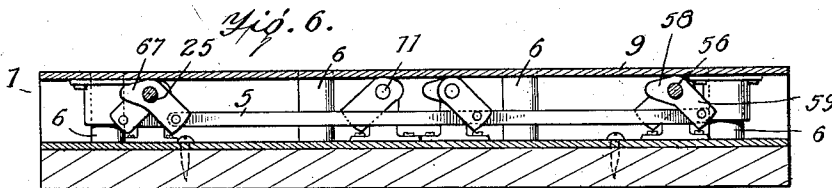
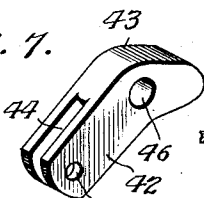


Fig. 7.



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Fig. 11.

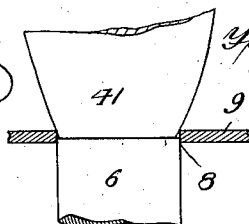
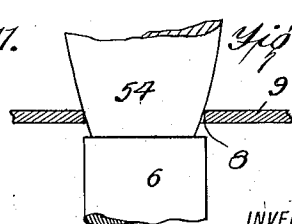


Fig. 12.



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4 SHEETS—SHEET 4.

Fig. 13.

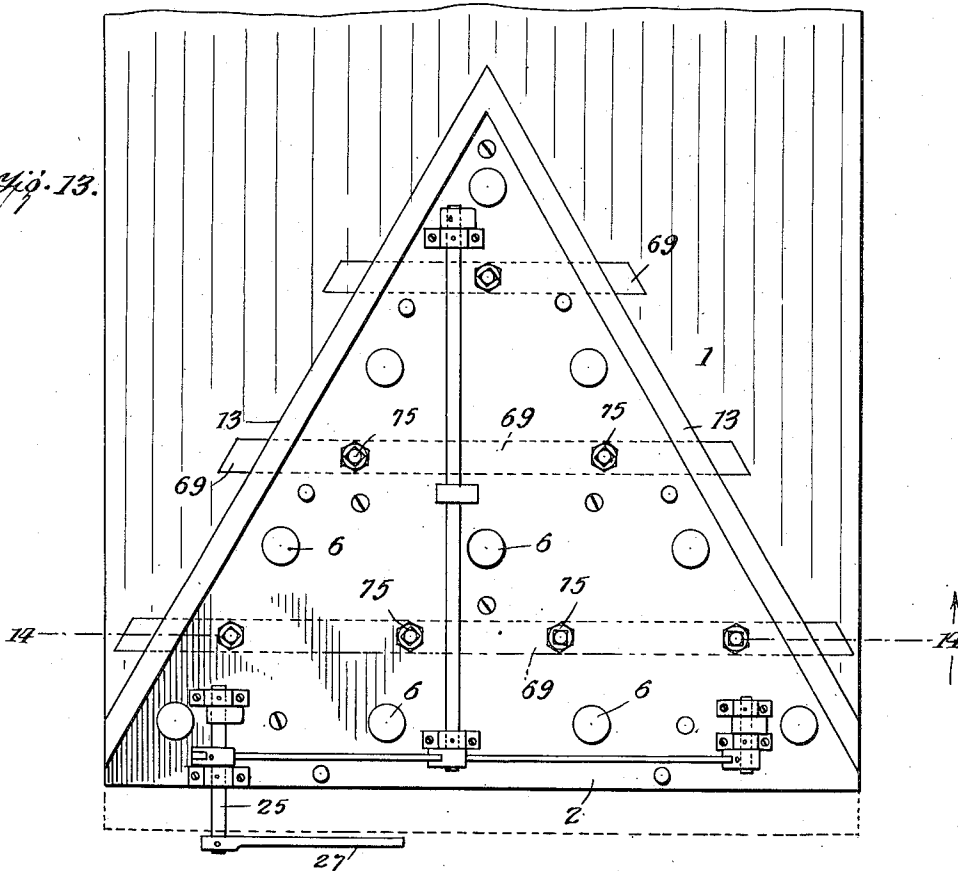


Fig. 14.

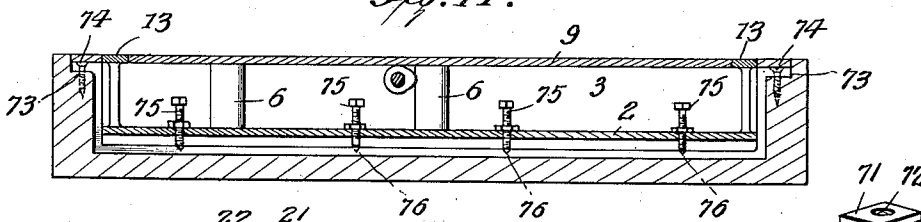
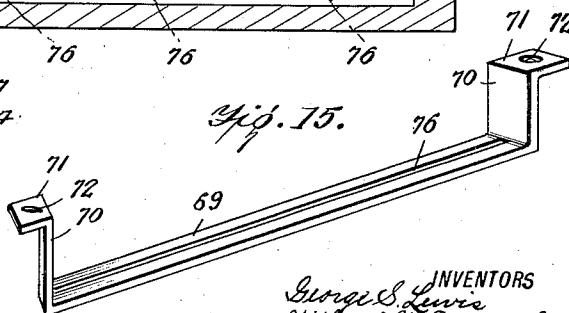


Fig. 16.

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Fig. 15.



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UNITED STATES PATENT OFFICE

GEORGE S. LEWIS AND WILLARD M. FARROW, JR., OF WASHINGTON, DISTRICT OF COLUMBIA; SAID FARROW, JR., ASSIGNOR OF THREE-TENTHS OF HIS RIGHT TO SAID LEWIS.

PIN-SPOTTER.

955,416.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed September 24, 1909. Serial No. 519,310.

To all whom it may concern:

Be it known that we, GEORGE S. LEWIS and WILLARD M. FARROW, JR., citizens of the United States of America, and residents of Washington, in the District of Columbia, have invented certain new and useful Improvements in Pin-Spotters, of which the following is a specification.

This invention relates to certain new and useful improvements in pin spotting mechanism for bowling alleys, and it has for its objects among others to provide a device for this purpose which shall insure perfect alinement of the pins on the spots and which shall be reliable in preventing dishonesty on the part of the pin boys, as by its use the pins cannot be spotted in front, to the back or upon the side of their proper places without detection on the part of the bowler.

It has for a further object to provide such a construction whereby accessibility of all of the parts in case of repairs is easily had without affecting the durability of the entire machine which is so constructed as to insure long life or wearing of the parts and insuring protection of those portions of the alley where most wear usually occurs.

It has for a further object to provide a machine of few moving parts, the device as a whole being of simplified construction and the parts capable of manufacture at small cost and readily assembled and set up.

It has for a further object to provide a device wherein no special form of pins are required and by the use of which pins of different sizes may be used on the same device without changes of any character whatsoever.

Still a further object is to provide a device which can be easily and quickly operated, and which embodies a signal that must be exposed so that the bowler is at all times advised whether the machine is being used by the pin boy when setting the pins.

It has for a further object to provide such a construction that the alley can be planed and leveled when necessary without tearing out the apparatus or replacing or resetting the same, suitable provision being made for adjustment of the parts for such purpose.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the

accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a perspective view of a portion of an alley with the improvements applied. Fig. 2 is an enlarged top plan with the movable plate removed. Fig. 3 is a vertical cross section on the line 3—3 of Fig. 2, looking in the direction of the arrows. Fig. 4 is a vertical longitudinal sectional detail taken on the line 4—4 of Fig. 2, looking in the direction of the arrows. Fig. 5 is a top plan showing a modified form of operating mechanism. Fig. 6 is a cross section on the line 6—6 of Fig. 5, looking in the direction of the arrows, the upper plate being removed in Fig. 5 and also in Fig. 2. Fig. 7 is a perspective view of one form of lifting cam. Fig. 8 is a plan view with the upper plate removed, showing the locking mechanism. Fig. 9 is an enlarged vertical cross section through Fig. 8 showing the locking mechanism for the centering plate. Fig. 10 is an enlarged detail in vertical section showing a modified form of construction. Figs. 11 and 12 are diagrammatic views showing the adaptation of the device to different sized pins. Fig. 13 is a plan view with the top plate removed. Fig. 14 is a vertical transverse section on the line 14—14 of Fig. 13. Fig. 15 is a perspective view of one of the cross pieces employed in the construction shown in Figs. 13 and 14. Fig. 16 is an enlarged detail in section showing one form of adjustable spotter.

Like numerals of reference indicate like parts in the different views.

In pin spotting or centering devices for bowling alleys as heretofore constructed, it has been the practice to provide means whereby vertical movement is given to the spotting pins. As a rule, such devices necessitate the employment of a special form of pin, having an opening or a socket or depression in their bottoms into which the setting pins are projected. This has been found to be objectionable for the reason that pins of ordinary construction cannot be employed and, furthermore, because of the unreliability of movement of a plurality of such pins; they are liable to distortion and to be easily thrown out of alinement, and, furthermore, they are liable, through neglect of the pin spotters, to be left within the sockets of the pins where they interfere with

the proper fall of the pins when struck by the ball.

In the present construction, the pins are stationary, movement being given only to the upper plate, which, when in its operative position, forms a portion of the bed of the alley, whereby less power is required to actuate the same, more accurate movement is assured, and, furthermore, the same apparatus is adapted for use with pins of different sizes, making the alley serviceable for use either with duck pins or ten pins, as may be desired.

In addition to the above, by the employment of the stationary spot and the movable plate, there is no post or peg or anything liable to break or bend by a pin or pins flying from another alley.

The mechanism for accomplishing the above purposes, as well as for locking the movable plate in position flush with the top of the alley, such action being accomplished by the same mechanism which moves the plate, will now be described.

Referring to the drawings, 1 designates the bed of the alley which is of any of the well-known or approved forms of construction except as hereinafter specified.

Referring first to Figs. 1, 2 and 3, 2 is a plate secured within a chamber 3 in the alley, which chamber is of a triangular form, as shown, said plate, in this instance, being secured to the wooden base 4 by screws or the like 5, although any other suitable means may be employed. Rising from this plate are the spotters 6 which may be secured thereto in any well-known way. In Fig. 3, they are shown as provided with threaded shanks 7 engaging corresponding openings in the plate 2, but this is only one of the numerous ways in which the spotters may be rigidly and fixedly supported in position. These spotters are, in diameter, substantially the same as the bottom of the duck pins or ten pins, although somewhat larger, as seen clearly in Figs. 11 and 12. They are of the same diameter as openings 8 in the movable upper plate 9, as seen clearly in Figs. 11 and 12 and also in Fig. 3 where they are shown as extending through said openings. For the purpose of adjustment, suitable adjusting screws 10 may be provided, as seen in Figs. 2 and 4. The upper plate 9, having the openings for cooperation with the spotters 6, is designed to be raised for the purpose of spotting the pins, and, in order to guide this plate in its movements and insure parallelism between the same and the bottom plate, as well as with the upper face of the alley, there are provided, at certain points, say at the three corners and in the middle, collars or sleeves 11 depending from the under face of the upper plate and embracing the corresponding spotters. In order to form a support for the upper plate

when in its lowermost position, there are located the supports 12 in the form of standards or the like rising from the bottom plate at points around the edges, as seen in Figs. 2, 3 and 4. In order to protect the adjacent portions of the woodwork of the alley from abrasion or rubbing thereagainst, by the upper plate in its movements, there is provided around the edge of the socket a metal protecting plate 13 which is made rigid with the bottom plate 2 in any suitable manner, as by the posts or the like 14. In some instances, it may be advisable to make this protecting plate with a depending flange, as seen at 15 in Fig. 10, which may be secured to the adjacent side wall 16 of the socket 3 by any suitable means, as screws or the like 17.

In Fig. 16 is shown another means of supporting the spotters. In this form, 18 is a rod, the lower end of which is riveted or otherwise secured to the bottom plate 2, as shown at 19, its upper end being threaded, as shown at 20. 21 is a spotter having a screw-threaded socket 23 which receives this screw-threaded portion 20, a set nut 23 being employed to hold the same in its adjusted position. By this means, the spotter may be vertically adjusted to compensate for any irregularity in the parts or to compensate for the truing up of the alley at any time. The spotter may be provided with one or more sockets 24, as seen in said Fig. 16, for the application of a spanner or other suitable instrument, whereby the spotter may be adjusted vertically, as occasion may require. It is to be understood that the spotters are, in this instance, as well as in the construction shown in Fig. 3, designed to be permanently supported from the bottom plate while the top plate is movable with relation thereto.

Suitable means are provided for moving the upper plate 9, and to insure that it shall be moved in a parallel plane throughout its entire surface, this raising mechanism is disposed with such end in view. As seen in Fig. 2, this raising means comprises a shaft 25 mounted in suitable bearings 26 and provided, at the end of the alley, with an operating lever. On the shaft 25 is a cam 28, which, as will be understood upon reference to Fig. 2, is disposed near one corner or angle of the triangle. 29 is a rod connected with a link 30 fast upon the shaft 25. This rod 29, in turn, connects with a link 30 fast on a shaft 31 extending lengthwise of the alley and carrying near its center a cam 32. This shaft 31 is mounted in suitable bearings 33 and at its innermost end carries a cam 34. The link 30 has connected therewith a rod 35, the other end of which is connected with a link 36 on a shaft 37 mounted in suitable bearings 38 and carrying a cam 39, which latter, it will be noted, is disposed

at the other rear corner of the triangle, the cam 32 being disposed near the center and the cam 34 near the apex. It will be readily understood that upon manipulation of this lever 27, the shafts 25, 31 and 37 will be revolved and all of the cams caused to act directly upon the under face of the upper plate 9, and elevating the same. Normally, the parts are in the position indicated in Fig. 1. The upper plate 9 is down so that its upper surface is flush with the upper surface of the spotters 6 and with that of the protecting plate 13 and the alley 1. In this position, the lever 27 is horizontal, as shown, a rear plate 40 being provided to close the end of the socket and to make a neat finish, as seen in said Fig. 1, the shaft 25 projecting therethrough. When it becomes time to set the pins, the pin boy raises the lever 27, and this raising of the lever is a visual indication to the bowler that the device is being operated so as to properly spot the pins. This actuation of the lever 27 serves, through the means hereinbefore described, to raise the upper plate 9. In Fig. 11, we have illustrated the manner in which this plate is raised so as to be above the upper surface of the spotters. The pin boy then sets the pins 41 within the openings 8 of the upper plate 9, the bottoms of the pins resting upon the upper ends of the spotters 6. By this means, all of the pins must be properly spotted, else they will not stand, and, as soon as the pins are in position, the pin boy moves the lever 27 into its horizontal position, when the upper plate, by its own weight, falls into its normal position with its upper face flush with the upper face of the alley and the protecting plate 13. As this is done, the upper surface of the plate being even with the upper end of the spotters 6, there is nothing to interfere with the pins readily toppling over as soon as they are struck by the ball or by another pin.

In some instances, it may be advisable to make the link and cam in one piece. Such a construction is seen in Fig. 7 wherein the link 42 and the cam 43 are in one integral piece, the link being slotted, as seen at 44, and having an opening 45, whereby it may be connected with its rod, the cam being provided with an opening 46 for the passage of the shaft upon which it is to be mounted. The operation is the same, however, as in the construction illustrated in Fig. 2 and hereinbefore specifically described.

It may sometimes be found advisable to lock the upper plate when it returns to its lowermost position. One efficient means for this purpose is illustrated in Figs. 8 and 9. As will be seen from these views, on the shaft 31 is a gear 47, which meshes with oppositely disposed and oppositely movable racks 48 and 49, as seen clearly in Fig. 9. These racks, near their upper ends, move in

suitable guides 50, their extreme ends being engageable in sockets 51 in lugs 52 depending from the opposite portions of the protecting plate 13, as will be clearly understood upon reference to said Fig. 9. On the shaft 31, upon opposite sides of the gear wheel 47, are collars or flanges 53 which serve to guide the gear in its movements and insure parallelism of the racks. The operation is apparent. The engagement of the ends of the racks in their sockets is but slight, so that, when the lever 27 is first actuated, the ends of the racks are withdrawn from their engagement in the sockets before the cams begin to act to raise the plate. It is to be understood that the locking mechanism is actuated by the same operating lever 27 that serves to raise the upper plate 9. As the lever is brought back to its horizontal position, and just after the plate 9 reaches its lowermost position, the final movement of said lever serves to again actuate the racks to project their free ends into the sockets so as to lock the upper plate firmly in position and prevent any upward movement thereof during the act of bowling.

In order to adapt the same mechanism for use in connection with duck pins or ten pins, or pins of different sizes, it becomes only necessary to provide for raising of the upper plate 9 a greater or less distance. Duck pins 54 are smaller at their lower ends than the ten pins 41. The diameter of the ten pin corresponding to the diameter of the opening 8 is, as will be understood upon reference to Figs. 11 and 12, nearer the bottom of said pin than is such diameter in a duck pin 54. Therefore, it becomes necessary to elevate the plate 9 a greater distance for a duck pin than for a ten-pin in order that the opening 8 of such upper plate may reach the point of the pin where the diameter is the same. This will be clearly understood upon reference to Figs. 11 and 12 where the difference in elevation of the plate in order to reach the same diameter of pin is made apparent. In order to accomplish such greater movement of the upper plate, there is provided another operating lever 55 attached to the shaft 56 mounted in suitable bearings 57 and having fast thereon a cam 58 and link 59, to which latter is connected a rod 60, which, in turn, is connected with a link 61, on a shaft 62 mounted in suitable bearings 63 and extending parallel with the shaft 31. This link 61 carries a cam 64 and to said link is connected a rod 65 which, in turn, is connected to a link 66 on the shaft 25 and this link carries a cam 67. 68 is a cam on the inner end of the shaft 62. By operating the lever 55, the cams 58, 64, 67 and 68 are thrown into operation to act upon the under surface of the upper plate 9, being so disposed as to distribute the power and, hence, insure parallelism of movement,

and these cams, being larger than the cams which actuate the upper plate for the setting of ten pins, move said upper plate a greater distance above the upper ends of the spotters 6, as will be evident upon reference to Fig. 12. The pins 54 are placed upon the spotters, and when all are in position thereon, the lever 55 is moved in the opposite direction and the plate brought down to its lowermost position with its upper face flush with the upper ends of the spotters. The lever 55 serves as a visual indicator to the bowler to notify him that the device is being operated to properly spot the pins. It is to be understood that either set of cams may be operated so that the device can be at any time used in connection with duck pins or ten pins.

In order to provide for proper adjustment of the parts to compensate for the truing up or planing of the alley, as will be necessary at times, we provide the construction illustrated in Figs. 13, 14 and 15, in which plates 69 are provided at the bottom of the chamber 3, said plates having the vertical end portions 70 terminating in horizontal flanges 71, which flanges are provided with openings 72 for the passage of screws or other means 73 by which they are secured to the adjacent portions of the alley. Wooden strips 74 are placed over the flanges 71 and their securing means 73, outside the protecting strip 13. The bottom plate 2 is disposed, as heretofore, within the chamber 3 but it is rendered adjustable, and with it the other parts, by suitable adjusting screws 75, which pass through said bottom plate 2 and engage the plates 69, the latter being, preferably, provided with grooves 76 in which the ends of the adjusting screws rest, as indicated in Fig. 14. It will thus be seen that whenever it becomes necessary to true up the alley, the plate 2, with the spotters and the protecting plate 13, may be lowered as may be required, the upper plate 9 accommodating itself automatically to such adjustment. There may be a greater or less number of these plates 69. In the present instance, we have shown three which we believe will be all that will be required.

If, for any reason, it should be desired to interlock the upper plate and the spotters, especially when the latter are made adjustable, as shown in Fig. 16, these spotters may be provided at their upper ends with a reduced portion by cutting away to form an annular groove, as indicated by dotted lines at 77 in said Fig. 16, the top plate being correspondingly cut away on its under surface to meet the same.

From the above, it will be seen that we have devised a simple and efficient pin spotting mechanism applicable to pins of different sizes and for pins of ordinary form, and, while the structural embodiment of the

invention, as herein disclosed, is what we, at the present time, consider preferable, it is evident that the same is subject to various changes, variations and modifications in detail, proportion and relative arrangement of parts without materially departing from the spirit of the invention or sacrificing any of its advantages. We, therefore, do not wish to be restricted to the particular construction and arrangement of parts or the details thereof, as hereinbefore disclosed, but reserve the right to make such changes, variations and modifications as come properly within the scope of the protection prayed.

What is claimed as new is:—

1. In means for spotting pins, stationary spotters and a centering plate forming a portion of the bed of the alley and movable with relation thereto.

2. In means for spotting pins, stationary spotters, a centering plate forming a portion of the bed of the alley and movable with relation thereto, and means coöperating with the spotters for guiding said plate.

3. In a pin spotting mechanism, a movable centering plate forming a portion of the bed of the alley, stationary spotters, and means disposed beneath said plate to elevate the same.

4. In a pin spotting mechanism, a movable centering plate forming a portion of the bed of the alley, stationary spotters, and means disposed beneath said plate to elevate the same and arranged to distribute the force upon said plate.

5. In a pin spotting mechanism, spotters, and a centering plate forming a portion of the bed of the alley and movable with relation thereto and having openings for the reception of said spotters.

6. In a pin spotting mechanism, stationary spotters, a vertically movable centering plate forming a portion of the bed of the alley and having openings for the reception of said spotters, and means adapting the same for use with pins of varying sizes.

7. In a pin spotting mechanism, relatively fixed spotters, a plate forming a portion of the bed of the alley and movable with relation thereto, and means for moving said plate a greater or less distance to adapt it for use with pins of different sizes.

8. In a pin spotting mechanism, a movable plate forming a portion of the bed of the alley, relatively fixed spotters, means for raising said plate a certain distance, and independent means for raising said plate a greater distance.

9. In a pin spotting mechanism, stationary spotters, a movable plate for coöperation therewith, and means for locking said plate in its lowermost position.

10. In a pin spotting mechanism, stationary spotters, a movable plate for coöpera-

tion therewith, means for raising said plate, and means cooperating with said raising means for locking said plate in its lowered position.

5 11. In a pin spotting mechanism, stationary spotters, a movable plate for cooperation therewith and forming a portion of the bed of the alley, and a protecting strip seated in the bed of the alley upon the sides
10 of said plate for taking the wear occasioned by the movement of said plate.

12. In a pin spotting mechanism, a plate secured beneath the bed of the alley, spotters carried thereby, an upper plate forming
15 a portion of the bed of the alley and movable with relation to the spotters, and a protecting strip rigid with the first-named plate for taking the wear occasioned by the movement of the movable plate.

20 13. In a pin spotting mechanism, a plate, spotters carried thereby, a protecting strip carried by said plate, an upper plate movable with relation to said spotters, and a locking device for said plate, cooperating
25 with said protecting strip.

14. In a pin spotting mechanism, spotters, a plate movable with relation thereto, a protecting strip for said plate, means for raising
30 said plate, and locking means for said plate cooperating with said raising means and protecting strip.

15. In a pin spotting mechanism, spotters, a centering plate movable with relation thereto and forming a portion of the bed of the alley, means controlling the movement
35 of said plate and means for varying the extent of its movement.

16. In a pin spotting mechanism, relatively movable spotters and centering plate, the latter forming a portion of the bed of the alley, and means independent of each
40 other for controlling the movement of the movable member and for varying the extent of its movement.

17. In a pin spotting mechanism, relatively movable spotters and centering plate, the latter forming a portion of the bed of the alley, and means controlling the movement
45 of the movable member for giving the same a greater or less movement to adapt the same for use with pins of less or greater diameter at the base.

18. In a pin spotting mechanism, a plate carrying relatively fixed spotters, means for
55 vertical adjustment thereof, a centering plate for cooperation with said spotters and forming a portion of the bed of the alley, and means for raising said plate.

19. In a pin spotting mechanism, a plate carrying relatively fixed spotters, means for
60 vertical adjustment thereof, a centering plate for cooperation with said spotters and forming a portion of the bed of the alley, means for raising said plate, and a protecting
65 plate outside the movable plate.

20. In a pin spotting mechanism, a plate carrying relatively fixed spotters, means for vertical adjustment thereof, a centering
70 plate for cooperation with said spotters, means for raising the centering plate, and a protecting plate outside the movable plate and adjustable with the first-named plate.

21. In a pin spotting mechanism, stationary spotters, a movable plate having open-
75 ings in alinement with said spotters, an edge protecting strip for said movable plate, and means for locking the movable plate with its upper surface flush with that of said protector and the alley.

22. In a pin spotting mechanism, station-
80 ary spotters, a vertically movable plate having openings in alinement with said spotters, a protecting plate for said movable plate having depending lugs with sockets, and
85 locking means for said movable plate having portions engageable in said sockets.

23. In a pin spotting mechanism, station-
ary spotters, a vertically movable plate hav-
ing openings in alinement with said spotters,
90 a protecting plate for said movable plate having depending lugs with sockets, locking
means for said movable plate having por-
tions engageable in said sockets, and plate-
raising means operatively connected with
95 said locking means.

24. In a pin spotting mechanism, station-
ary spotters, a movable plate forming a por-
tion of the bed of the alley and having open-
ings in alinement with said spotters and
100 plate-raising means disposed beneath said movable plate and having a member serving
as a visual indicator.

25. In a pin spotting mechanism, station-
ary spotters, a movable plate having open-
ings in alinement with said spotters, plate-
105 raising means having a member serving as a visual indicator, and plate-locking means
operatively connected with said plate-raising means to lock the same to the bed of the
110 alley.

26. In a pin spotting mechanism, a spot-
ter, a support therefor upon which it is ad-
justably mounted, and a plate forming a
portion of the bed of the alley and movable
115 with relation to the spotter and having an opening in alinement therewith.

27. In a pin spotting mechanism, a spot-
ter, a support therefor upon which it is ad-
justably mounted, a plate forming a portion
of the bed of the alley and movable with re-
120 lation to the spotter and having an opening in alinement therewith, and a lock nut on
said support.

28. In a pin spotting mechanism, a spot-
ter, a support therefor upon which it is ad-
justably mounted, a plate forming a portion
of the bed of the alley and movable with re-
125 lation to the spotter and having an opening in alinement therewith, and means for rais-
ing said plate to different heights.

29. In a pin spotting mechanism, a spot-
ter, a support therefor upon which it is ad-
justably mounted, a plate movable with re-
lation to the spotter and having an opening
5 in alinement therewith, and means for rais-
ing said plate different distances, and means
for locking said plate in its lowered position.

30. In a pin spotting mechanism, a spot-
ter, a support therefor upon which it is ad-
10 justably mounted, a plate movable with re-
lation to the spotter and having an opening
in alinement therewith, means for raising

said plate at different distances, and means
for locking said plate in its lowered position,
said locking means being operable by the 15
raising means.

Signed by us at Washington, D. C. this
24th day of Sept. 1909.

GEORGE S. LEWIS.

WILLARD M. FARROW, JR.

Witnesses:

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PERCY H. RUSSELL.