W. M. FARROW, Jr.

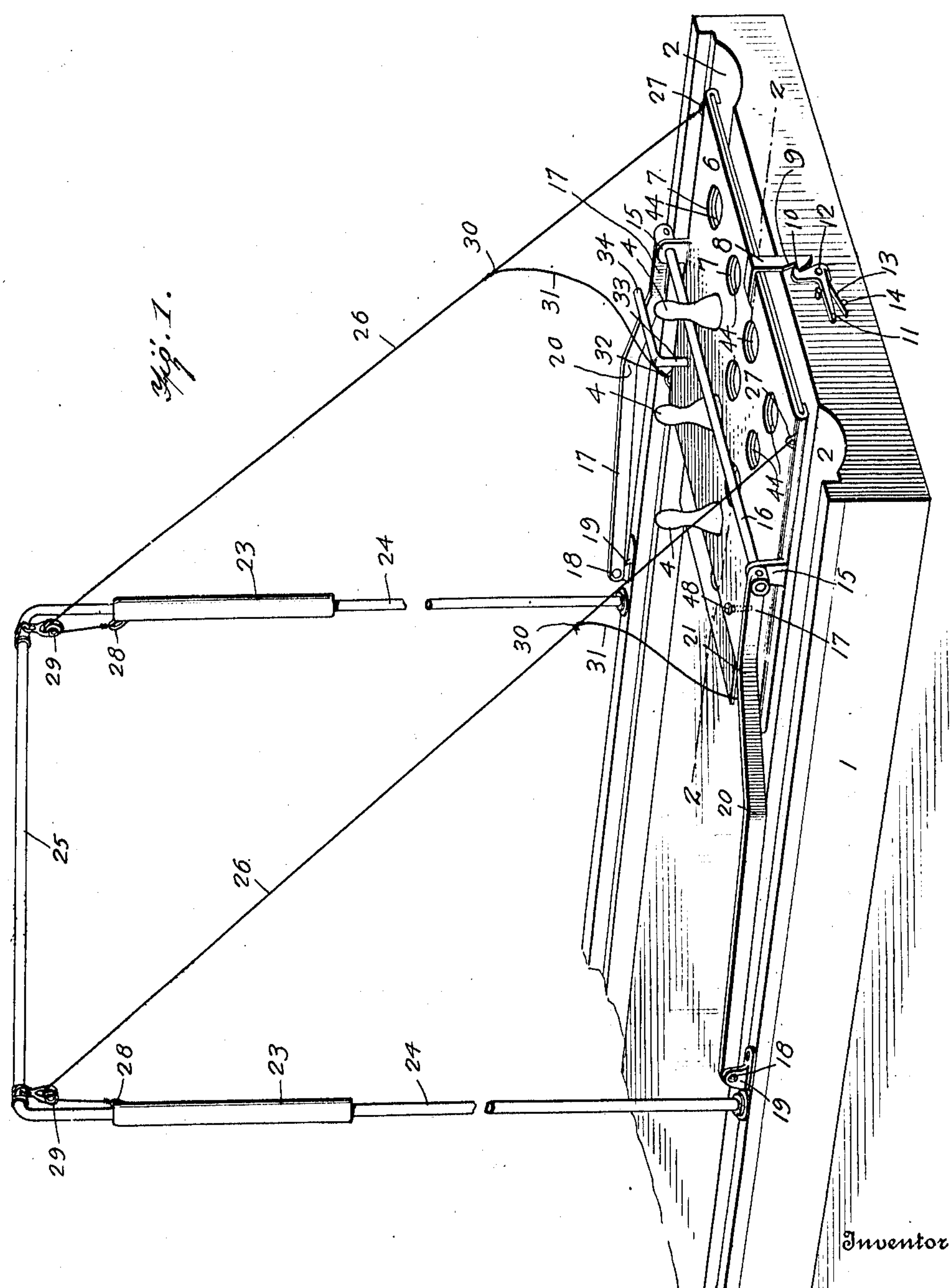
PIN SPOTTING MECHANISM.

APPLICATION FILED MAR. 4, 1912.

1,041,055.

Patented Oct. 15, 1912.

3 SHEETS—SHEET 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

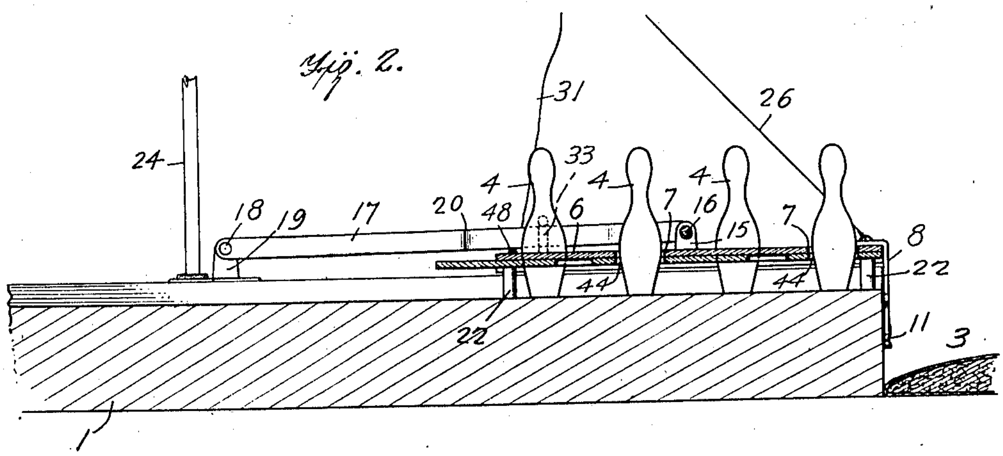


Fig. 4.

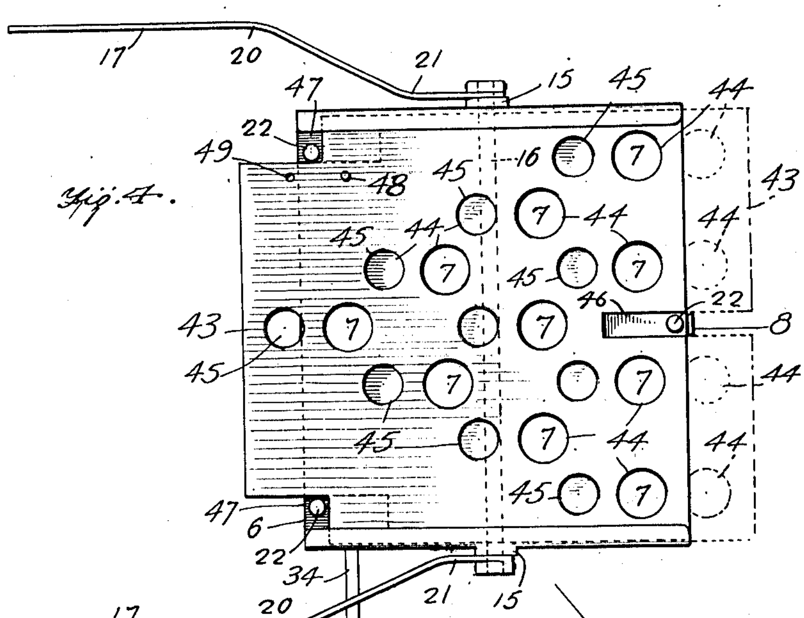
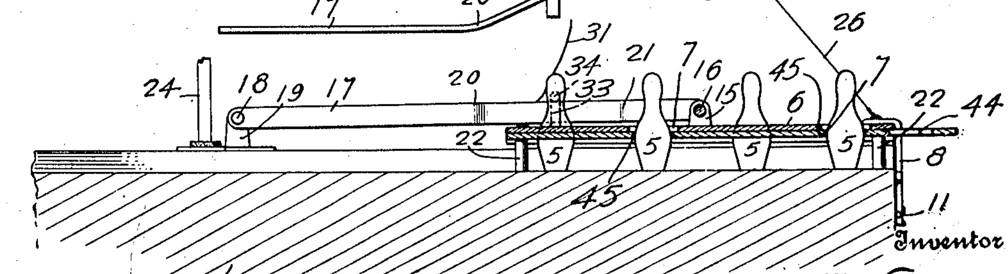


Fig. 3.



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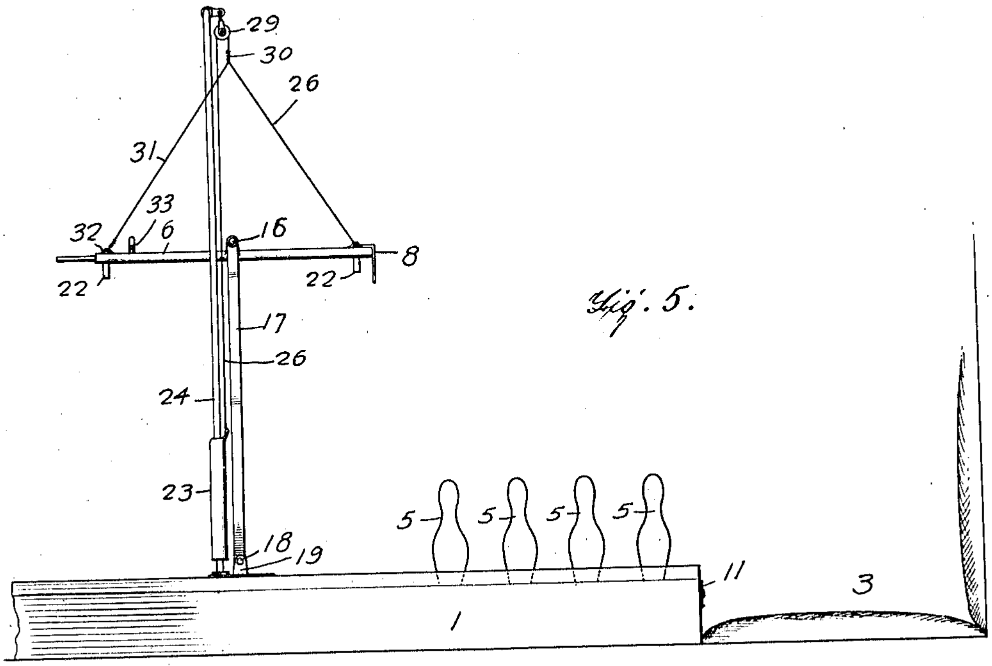

Fig. 5.

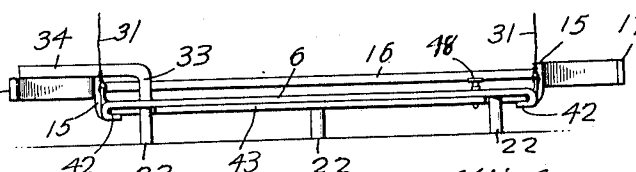

Fig. 6.

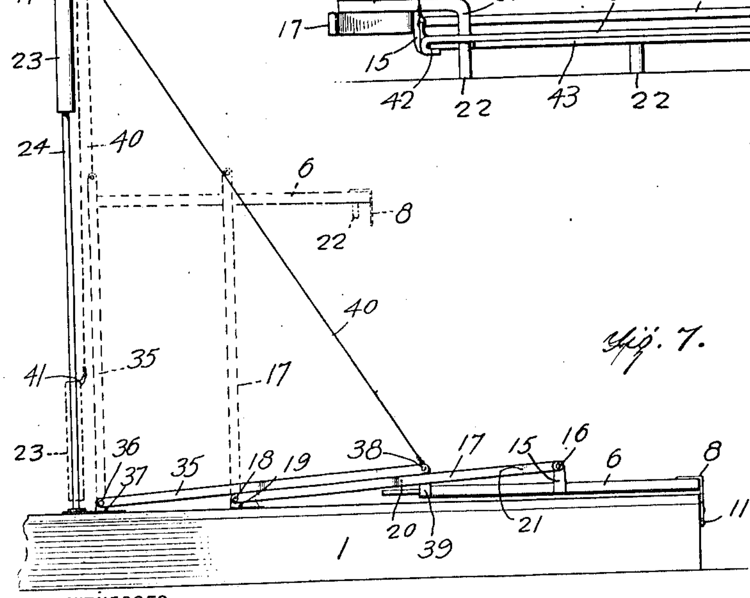

Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLARD M. FARROW, JR., OF WASHINGTON, DISTRICT OF COLUMBIA.

PIN-SPOTTING MECHANISM.

1,041,055. Specification of Letters Patent. Patented Oct. 15, 1912.

Application filed March 4, 1912. Serial No. 681,571.

To all whom it may concern:

Be it known that I, WILLARD M. FARROW, Jr., a citizen of the United States of America, and a resident of the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Pin-Spotting Mechanism, of which the following is a specification.

This invention relates to certain new and useful improvements in pin spotters or setters of that class embodying a movably mounted plate adapted for coöperation with the pins and movable away therefrom after the pins have been spotted.

The present invention has for its objects among others to provide a simplified and improved device for this purpose in which the plate is mounted for oscillatory movement in contradistinction to a vertical direct movement, and as the plate is oscillated it is maintained in a horizontal position so that when in its elevated position it is exposed to the view of the bowler not in a vertical position but so that the edge only thereof is visible.

It has for a further object to so mount the plate that when the latter is thrown into its elevated position, it will be moved into a path or plane out of the vertical plane through the foremost pin so that all danger of the pins being thrown up into contact with the plate is eliminated.

I provide a special construction whereby the plate is maintained in its horizontal position during its movement from its lowermost to its uppermost limit, and counterweight the same so that it is automatically held in its elevated position.

I also provide means whereby the same plate may be employed for use in connection with pins of different sizes.

I aim further at improvements in the details of construction whereby better results are attained, cheapness of manufacture is assured, together with positiveness in action, and the liability of injury reduced to a minimum.

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 capable of embodiment in a variety of forms, some of the preferred ones of which only are herein illustrated, but which are deemed sufficient to make clear the embodiment of the invention and its mode of operation.

The invention, in such preferred forms, 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 the alley bed with my improvement applied, portions being broken away. Fig. 2 is a vertical longitudinal section as on the line 2—2 of Fig. 1. Fig. 3 is a similar vertical longitudinal section showing the plate arranged for coöperation with the smaller or duck pins. Fig. 4 is a bottom plan view of Fig. 3 with the bed of the alley removed. Fig. 5 is a side elevation showing the plate in its elevated position. Fig. 6 is an end elevation of the form shown in Fig. 1. Fig. 7 is a side elevation showing a modified form.

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

Referring to the drawings, 1 designates the bed of the alley which may be of any well known or approved form of construction, 2 being the gutter thereof and 3 the pit.

4 in Figs. 1 and 2 are the ordinary tenpins, while 5 in Figs. 3 and 5 are the smaller pins known as duck pins. My invention is designed for use in connection with pins of either size. I will first describe it as designed for use in connection with the larger pins.

Referring to Figs. 1 and 2, 6 is a plate having therein openings 7, ten in number, of course, of a size adapted to receive and coöperate with the larger pins 4. This plate is designed to be held in its horizontal position in proximity to the bed of the alley, as seen in Fig. 1, by any suitable means, one form of which I have herein illustrated and which comprises a depending rigid member 8 having a notch 9, said member being secured in any well known way to the upper face of the plate, as seen in Fig. 1, where it is shown as soldered thereto, although this, as will be evident, is but one way in which this may be affixed in position. Coöperating with the notch of this member 8 is the hooked member 10 of a pivoted member 11 fulcrumed at 12 on the end of the bed of the alley, 13 being a spring contacting with a pin 14 in the end of the bed of the alley and tending normally to keep the pivoted member 11 in the position in which it is shown in Fig. 1, namely with the hooked member in engagement with the notch of the member 8, so as to hold the plate in its lowermost position. When it is desired to disengage the plate, pressure on the free end of the arm of the lever compresses the spring and removes the hooked member of the lever from its engagement with the notch of the member 8 in a manner which will be readily understood. This lever may be operated by the hand or the foot of the boy setting the pins. This plate is mounted for oscillatory movement in the following manner. Rising from the sides thereof at the midlength of the plate, are the lugs or ears 15 which may be integral therewith or rigidly affixed thereto in any well known manner and loosely received in these ears is the transverse rod 16 on which the ears have free pivotal movement. The ends of this rod extend beyond the ears, and rigidly affixed to these extended ends in any suitable manner are the ends of the side arms 17, as seen in Fig. 1. These arms have their other ends pivotally mounted, as at 18, in suitable ears or the like 19 rising from the sides of the bed of the alley, as seen clearly in Fig. 1. These arms are offset outward, as at 20, and again offset, as at 21, see Fig. 1, so that the arms extend for a portion of their length parallel to and in vertical alinement with the sides of the alley, and their portions adjacent their pivotal connections with the plate extend in a plane parallel to and in close proximity with the sides of the plate, whereby the required oscillatory movement is better obtained.

In order to support the plate 6 at the proper distance from the bed of the alley, so that the holes therein shall embrace the pins at substantially their greatest diameter and also to guard against the walls of the openings in the plate contacting with the pins when the plate is elevated, I provide suitable means, as the pins 22, which depend from the under side of the plate, as seen in Figs. 2 and 3, which pins come in contact with the upper face of the bed of the alley, as will be readily understood upon reference to Fig. 2.

The plate 6 is counterbalanced, in this instance, by means of the weights 23 which are mounted to slide upon the vertical posts or rods 24 supported at their lower ends in any suitable manner upon the sides of the bed of the alley, preferably at a point in close proximity to the pivots of the arms 17 carrying the plate, as seen in Fig. 1. These posts or rods are joined at their upper ends by a transverse member 25 which, however, may be omitted in some cases, the upper ends of the rods 24 being supported or braced in any suitable manner, dependent upon the conditions where the device is to be applied. 26 are cords, chains or the like, having one end attached, as at 27, to the plate 6 at one end, that toward the pit, and their other ends connected in any suitable manner, as at 28, with the counterbalance weights 23, these cords or chains passing over suitable pulleys 29 supported in any suitable manner near the upper ends of the rods 24, as will be clearly understood upon reference to Fig. 1. The cords 26 have connected therewith, as at 30, the shorter cords 31, the other ends of which are connected in any suitable manner, as at 32, to the sides of the plate 6 near the front end thereof, that is the end nearest the bowler. These shorter cords or chains 31 are of such a length as to be slack, as indicated in Fig. 1, when the plate is in its lowermost horizontal position, that shown in said Fig. 1, for a purpose which will soon be made apparent.

Rising from the plate 6, near its front end, is an arm 33 terminating in a horizontal portion 34 which extends outward beyond or over the adjacent portion of the arm 17, as seen in Fig. 1, for a purpose which will hereinafter be explained.

With the parts constructed and arranged substantially as hereinbefore described, the operation of this form of the invention will be as follows: Normally, that is during the process of bowling, the plate is in its elevated position, that indicated in Fig. 5. When the pins are to be set, the plate is brought down into its horizontal position where it is automatically locked by engagement of the member 8 with the hooked member of the lever, as seen in Fig. 1. The pins are then set upon the spots through the holes 7 in the plate 6 and when all is in readiness, the pin boy moves the lever 11 so as to disengage its hooked member from the notch of the member 8, when the weights automatically move the plate upward. As the plate starts to move upward, the horizontal arm 34, together with the slack in the short cords 31, serves to keep the plate in a substantially horizontal position and prevent its being tipped up into a vertical or inclined position. After the plate has moved a short distance, the cords 31 are drawn taut and the arm 34 moves out of engagement with the arm 17 and the weights continue to draw the plate into its uppermost position, which is that seen in Fig. 5. By the peculiar manner of mounting of the plate in connection with the slack in the short cords 31 and the operation of the arm 34 in keeping the plate horizontal, it is oscillated from its lowermost horizontal position into its uppermost position, and during all of such movement, the plate is retained in substantially horizontal position and when elevated it presents practically no obstruction to the view of the bowler. The plate is so mounted that as it moves from its lowermost position, it is first raised substantially vertically at its initial movement so as to clear the pins and hence there is no danger whatever of moving the pins from their proper position on the spots on the bed of the alley.

In Fig. 7 I have shown a construction similar to that above described wherein similar movement of the plate is obtained, that is the plate is adapted to have an oscillatory movement but at all times maintained in a horizontal position. In this form, I employ the arms 17, as in the form just described, the same being pivotally mounted, as at 16, upon the ears 15 of the plate 6 and at 18 upon the lugs 19 on the bed 1 of the alley. Instead, however, of employing the slack cords 31, I employ the arms 35 pivotally mounted, as at 36, on ears 37 rising from the bed 1 of the alley adjacent the bases of the posts 24 and at their other ends pivotally mounted, as at 38, on lugs or ears 39 rising from the end of the plate toward the bowler. The cords 40 are connected at one end to the end of the plate nearest the bowler and after passing over the pulleys 29 are attached, as at 41, to the counterbalance weights 23 slidable upon the rods 24, as in the prior construction. The plate 6 is held down in its lowermost position by the member 8 and lever 11, as in the form shown in Figs. 1, 2, 3 and 4, and when this lever is disengaged from the member 8, the counterbalance weights pull the plate into the position indicated in dotted lines in Fig. 7, the plate, by reason of the pivotal connections shown and just described, assuming during all of its movement a horizontal position. In this construction, the arms 35 serve the same function as the loose cords 31 in the form shown in Figs. 1 to 4.

I provide suitable means whereby the device is adapted for use in connection with the larger or smaller pins, as before mentioned, and this means is applicable to both of the forms of plate-moving device, as it pertains solely to the plate and not to the means whereby the latter is moved. This feature of construction will be best understood upon reference to Figs. 1 to 4 and Fig. 6, in which it will be seen that the plate 6 has its edges underturned, as at 42, forming guides as well as a support for the under plate 43 which is movably mounted therein in the direction of the length of the alley. This plate is provided with openings 44 of a size corresponding to the openings 7 in the top plate 6, so that when the plate 43 is in such position relatively to the plate 6 that the holes 7 and 44 of the two plates are coincident, the plate can be used with the larger pins. The plate 43 is further provided with similar holes 45 for receiving the smaller pins 5, as seen in Fig. 3. When the plate is moved from its full line position in Fig. 4 to its dotted line position, in which latter position it is seen in full lines in Fig. 3, the openings 45 of the plate 43 are brought coincident with the openings 7 in the plate 6, the openings 45 being, as will be readily understood, of a size corresponding to that of the pins 5, and when the plate 6 is raised, the said plate will clear the pins which will be left standing exactly upon the spots on the bed of the alley. In order to permit of this slight movement of the plate 43, it is provided with a slot 46, as seen in Fig. 4, which slot is coincident with the depending member 8 of the plate 6, so that the latter will not interfere with the movement of the movable plate 43. The end supporting pin 22 of the plate 6 is coincident with this slot, while the pins 22 at the end of the plate nearest the bowler are received in the notches 47 of the plate 43, as will be readily seen upon reference to Fig. 4.

In order that the plates 6 and 43 may be immovably held in their fixed relation in whichever position they are adjusted, I provide suitable means, as a removable pin 48, seen in Figs. 1, 2, 3 and 4, engageable in coincident holes in the two plates when in the one position and in a hole 49 in the lowermost plate when in the other position. This movable plate can be readily changed from one position to the other and as it is mounted to slide accurately in its guides, the holes in the two plates are sure to aline when the plate 43 has assumed the proper position.

From the foregoing, it will be seen that I have devised a simple, efficient, reliable and durable device for the purposes outlined, and while the structural embodiment of such invention as herein disclosed is what I at the present time consider preferable, it is evident that the same is subject to changes, variations and modifications in details, proportion of parts, etc., without departing from the spirit of the invention or sacrificing any of its advantages. I, therefore, do not wish to restrict myself to the exact details hereinbefore set forth, 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. A pin spotting plate and a pivotal mounting therefor, and means to elevate the plate and to at all times maintain it in a substantially horizontal position.

2. A pin spotting plate, a pivotal mounting therefor and plate counterbalancing means to elevate the plate and to at all times maintain it in a substantially horizontal position.

3. A pin spotting plate, a pivotal support therefor, a counterbalance for the plate, and connections movable with the plate for main-

taining the plate at all times in a substantially horizontal position during its swinging movements.

4. A pin spotting plate, a pivotal support therefor, a counterbalance for the plate, connections for maintaining the plate at all times in a substantially horizontal position during its swinging movements, and means for automatically locking the plate in its lowermost position.

5. A pin spotting plate pivotally mounted for swinging movement, and means for maintaining it at all times in a horizontal position during its swinging movement.

6. A pin spotting plate pivotally mounted for swinging movement, means for elevating said plate, and means whereby said plate maintains at all times a substantially horizontal position.

7. A pin spotting plate, pivotally mounted arms, pivotal connections between said arms and the plate near the midlength of the latter, and counterbalance means connected with said plate.

8. A pin spotting plate, pivotally mounted arms, pivotal connections between said arms and the plate near the midlength of the latter, counterbalance means connected with said plate, and means tending to hold the plate substantially horizontal during its swinging movement.

9. A pin spotting plate, pivotally mounted arms, pivotal connections between said arms and the plate, ligaments connected with said plate and counterbalancing means, and means for insuring substantially horizontal maintenance of the plate during its swinging movements.

10. A pin spotting plate, a pivotal mounting therefor and means to elevate the plate and to at all times maintain it in a substantially horizontal position, and means for adapting said plate for use with different sized pins.

11. A pin spotting plate and a pivotal mounting therefor and means to elevate the plate and to at all times maintain it in a substantially horizontal position, said plate being formed of relatively movable members.

12. A pin spotting plate formed of relatively movable separately operable members having coöperating openings adapting the plate for use with large or small pins.

13. A pin spotting plate formed of relatively movable separately operable members having coöperating openings adapting the plate for use with large or small pins, and means for holding the plates in adjusted position.

14. A pin spotting plate formed of relatively movable members having coöperating openings adapting the plate for use with large or small pins, means for holding the plates in adjusted position, and a pivotal mounting for the plate whereby the latter is given a swinging movement.

15. A pin spotting plate formed of relatively movable members having coöperating openings adapting the plate for use with large or small pins, means for holding the plates in adjusted position, a pivotal mounting for the plate whereby the latter is given a swinging movement, and means for maintaining substantially horizontal position of the plate during all of its movements.

Signed by me at Washington, D. C. this 4th day of March 1912.

WILLARD M. FARROW, Jr.

Witnesses:
E. H. Bond,
M. A. Bond.