July 7, 1925. 1,544,928

O. H. OLSEN

PIN SETTER

Filed May 3, 1923 2 Sheets-Sheet 1

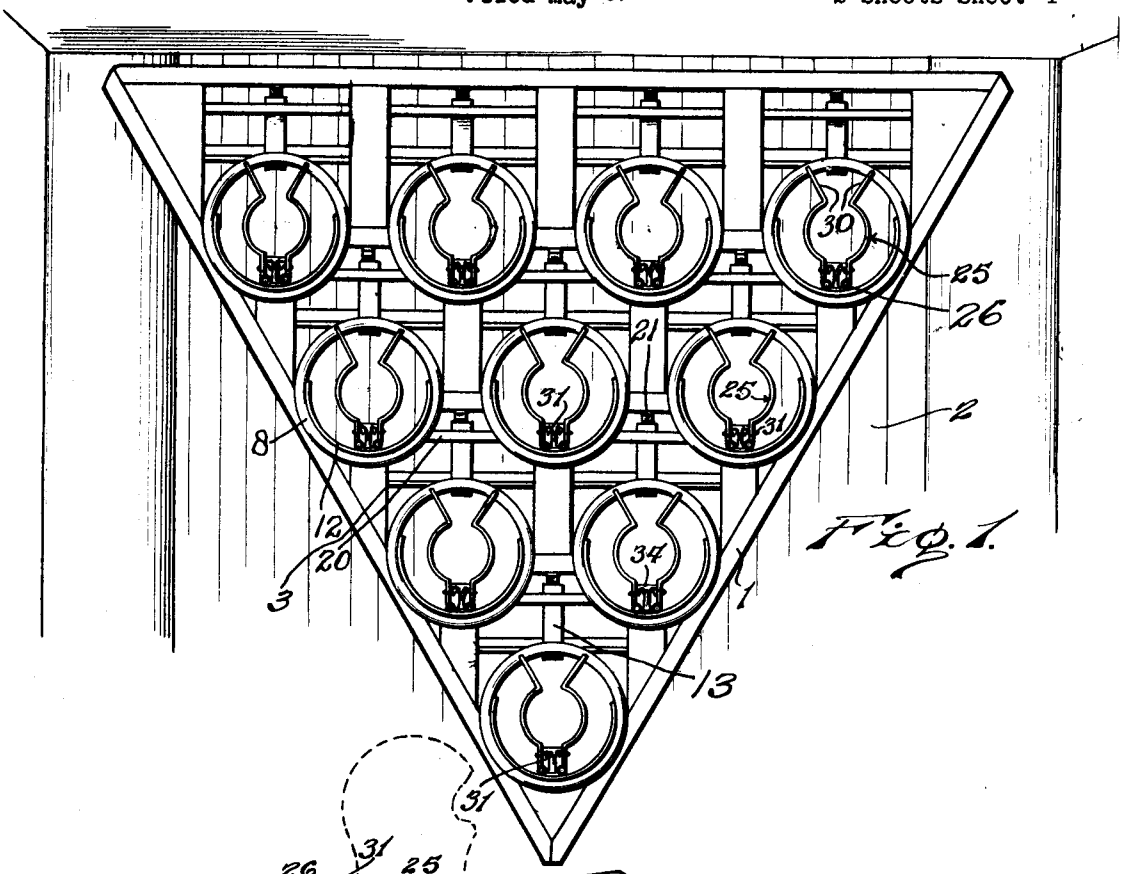


Fig. 1.

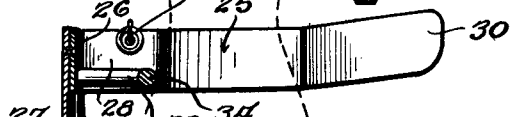
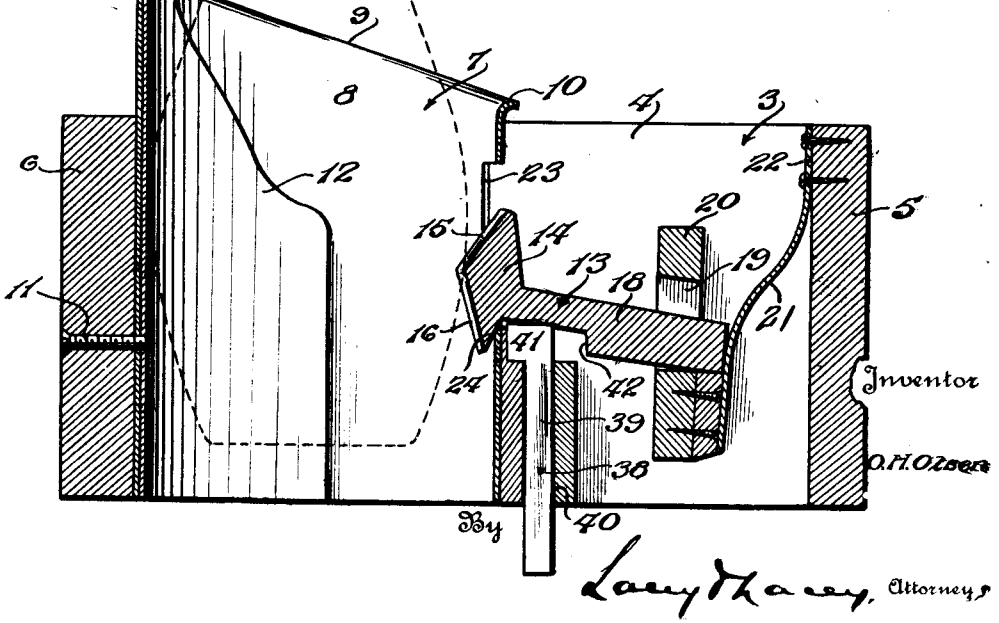


Fig. 2.



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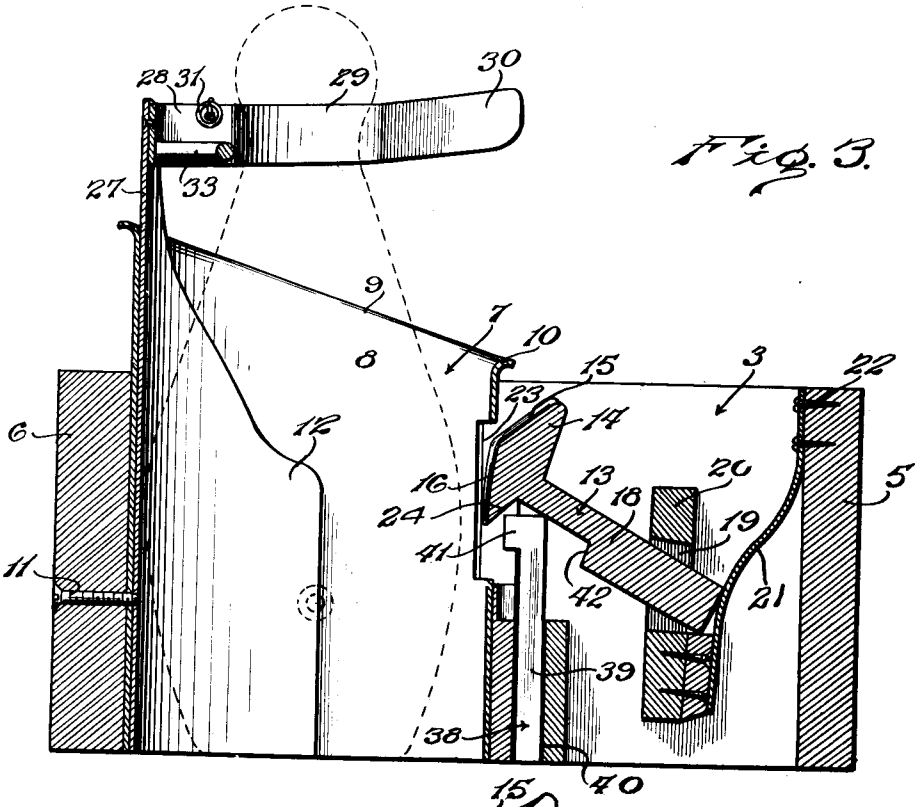


Fig. 3.

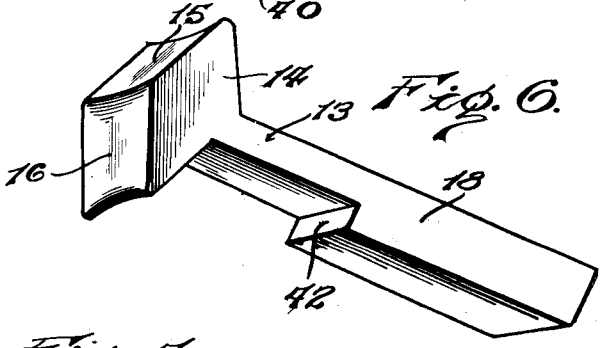


Fig. 6.

Fig. 5.

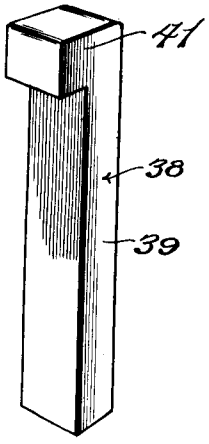
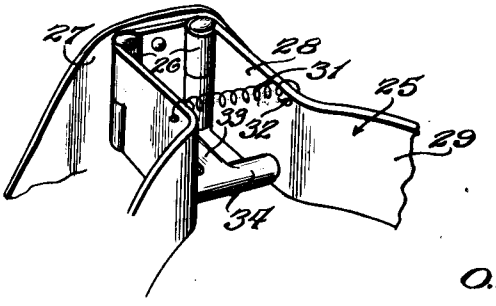


Fig. 4.



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Patented July 7, 1925. 1,544,928

UNITED STATES PATENT OFFICE.

OLE H. OLSEN, OF ROCK RAPIDS, IOWA.

PIN SETTER.

Application filed May 3, 1923. Serial No. 636,464.

To all whom it may concern:

Be it known that I, OLE H. OLSEN, a citizen of the United States, residing at Rock Rapids, in the county of Lyon and State of Iowa, have invented certain new and useful Improvements in Pin Setters, of which the following is a specification.

This invention relates to improvements in devices for setting the pins in bowling alleys, and the invention contemplates, in general, the provision of a pin setting device by the use of which the entire bank of pins may be practically instantly set in position upon the floor of the alley and properly centered upon their respective spots thereby avoiding the tedious hand setting of the pins as is ordinarily practiced.

One of the primary objects of the present invention is to so construct the pin setter that no particular care need be exercised in placing the pins therein, it being only necessary to drop the pins into the pockets of the setter in an approximately upright position, means being provided for coaction with the stems of the pins to more or less accurately center the pins when they are disposed in the pockets.

Another object of the invention is to provide novel means for sustaining the pins in upright position within the pockets until released therefrom and deposited upon the floor of the alley. Devices of this class are, of course, subjected to relatively rough usage and it may be expected that the attendant of the bowling alley will be more or less careless in throwing the pins into the pockets of the device, for which reason the invention contemplates so constructing the sustaining means and so mounting the same as to obviate the employment of pivots, hinges, or any other mechanical connections which would be liable to become broken or distorted through impact of the pins with the heads of the said sustaining members.

Another object of the invention is to so construct and mount the pin sustaining members of the device that they will not be subjected to any considerable strain when supporting the respective pins and yet will so securely engage the pins as to preclude any likelihood of the pins being prematurely dropped upon the alley floor.

Another object of the invention is to so construct the device that there will be no likelihood of marring of the pins.

In the accompanying drawings:

Figure 1 is a plan view of the device embodying the invention, a number of the pockets being assembled within a single frame;

Figure 2 is a vertical front to rear sectional view through one of the devices, the pin being illustrated in dotted lines as arranged within the pocket and supported therein by the pin sustaining member;

Figure 3 is a view similar to Figure 2 but illustrating the positions assumed by the parts when the pin is released for the purpose of setting it in upright position upon the floor of the alley;

Figure 4 is a detail perspective view illustrating the manner of mounting and relatively spacing the pair of pin stem engaging arms employed in connection with the pockets;

Figure 5 is a perspective view of the disengaging means for rendering the sustaining means inactive when the setting device is lowered onto the floor of the alley;

Figure 6 is a similar view illustrating the pin sustaining member.

The pin setting device embodying the invention comprises a number of units equivalent to the number of pins set, namely ten, and these units are arranged or built within a triangular frame which is indicated in general by the numeral 1. As is customary, in devices of this class, the frame 1 is supported and guided for vertical movement above the floor of the bowling alley, indicated in the drawings by the numeral 2, and suitable means is provided whereby the frame may be normally supported in an elevated position and, after the pins have been placed in the units thereof, manually or otherwise lowered to position upon the floor of the alley to set and spot the pins. However, inasmuch as various means may be employed for this purpose, it has been deemed unnecessary to illustrate any specific means as this does not constitute a part of the present invention.

The units referred to above are all of counterpart construction and consequently a description of one unit will suffice for all. Each unit comprises a frame which is indicated in general by the numeral 3 and pref-

erably consists of side members 4, a front wall 5, and a rear wall 6, the frame being open at the top and bottom and being suitably secured within the main frame 1 as shown in Figure 1 of the drawings. Each unit further comprises a pin receiving pocket which is indicated in general by the numeral 7 and which comprises a preferably substantially cylindrical body 8 open at its top and bottom and, if desired, having its top lying in a diagonal plane as indicated by the numeral 9, so that the pocket will be lower at the front than at the rear of its said top and thus permit of the more ready introduction of the pin into the pocket. Likewise it is preferable that the wall of the pocket at its top be overturned in an outward direction as at 10 so as to provide against scratching or marring of the surface of the pin as it is placed in the pocket. The pocket is disposed in upright position within the frame 3 and secured in place by means of a screw or bolt or other suitable fastening element 11 secured through the rear wall 6 of the frame and into or through the rear side of the wall of the pocket. Preferably a lining shield 12 is provided within the pocket and extends about the rear and partway about the sides of the interior of the pocket and reinforces these portions of the wall of the pocket and prevents them from becoming damaged if the pins are carelessly thrown into the pockets of the device.

The pocket 7 is interiorly of a diameter slightly greater than the major diameter of the body of the pin to be received therein, and the rear side of the body of the pin is designed to rest in frictional contact with the inner surface of the protecting shield or lining 12, means being provided, as will now be described, for frictionally engaging the forward side of the body of the pin on a line slightly below the line of the major diameter so as to sustain the pin in the pocket while the device is in an elevated position. The engaging and sustaining means referred to above comprises a sustaining member indicated in general by the numeral 13 and this member is preferably formed from wood and comprises a head 14 having a transversely concave seat 15 in its rearwardly presented face and which face is to coact or engage with the body of the pin to be sustained. The said seat 15 is, as stated, transversely concave, and it is preferable that the face of the head in which it is formed be beveled or inclined in opposite directions from a substantially medial transverse line thus providing a lower inclined surface 16 and an upper inclined surface. A shank 18 extends from the forward side of the head 14 and at its rear portion projects loosely through an opening 19 formed in a transverse partition member 20 fixed within the frame 3, the forward extremity of the stem seats against a leaf spring 21 which is secured at its upper end as at 22 to the inner side of the front wall 5 of the frame 3, the spring being deflected in a rearward direction from its attached end and slightly bowed in said direction and bearing at its lower end against the forward side of the partition member 20 below the opening 19. The forward side of the wall of the pocket 7 is formed with an opening 23 of dimensions greater than the marginal dimensions of the head 14, and the said head 14 is adapted to seat within this opening in the manner clearly shown in Figure 2 of the drawings. At the juncture of the shank 18 with the head 14, and at the lower side of the said shank, there is provided a shoulder which is indicated by the numeral 24, and this shoulder, when the member 13 is in the position which it will naturally assume by gravity, engages behind the wall of the pocket 7 at the lower side of the opening 23. The parts are so proportioned that when the member 13 is occupying its normal position and a pin is dropped into the pocket, the rear side of the pin will engage against the lining shield 12, and the forward side of the body of the pin will engage or rest within the seat 15 and approximately at the juncture of the surface portions 15 and 16. The member 13 is restrained against forward displacement by the engagement of the shoulder 24 behind the wall of the pocket 7 at the lower side of the opening 23, and therefore the pin will be sustained in an upright position within the pocket and be frictionally held against downward displacement.

At this point it will be understood that the function of the spring 21 is to yieldably hold the member 13 in a rearwardly shifted position so that when no pin is within the pocket 7, the member will rest by gravity with its shoulder 24 engaging behind the wall of the pocket at the lower side of the opening 23. Therefore, the member is automatically positioned to be engaged by the pin when the pin is dropped into the pocket, and to act to sustain the said pin.

In order that the pin may be substantially centered in an upright position and prevented from assuming a more or less canted position, means is provided which will now be described. The means referred to is designed to coact with the stem of the pin and comprises a pair of arms 25 hinged at one end, as at 26, to an upward extension 27 of the lining shield 12. The arms have shank portions indicated by the numeral 28, and beyond the shank portions are bent on the arc of a circle, as at 29, to provide a portion to partly surround the stem of a pin placed within the pocket, the terminal portion of the arms being deflected laterally in an outward direction, as indicated by the numeral 30. A spring 31 is connected at its

ends to the shanks of the arms, as at 32, and normally holds the arms yieldably swung toward each other. In order that the movement of the arms toward each other may be limited, a shank 33 extends from the extension 27 between the shanks 28 of the arms and is provided with a transverse head 34 the ends of which constitute abutments for the said shanks of the arms. It will be evident that the arms may be swung outwardly away from each other against the tension of the spring 31 and that the outwardly deflected portions 30 of the arms provide a gradually narrowing throat through which the stem of the pin may pass as the pin assumes an upright position and with its stem portion embraced by the portions 29 of the arm. The stem of the pin is not firmly embraced by the arms but it will be understood that the arms serve merely the purpose of loosely engaging the stem of the pin so as to insure of the pin assuming and maintaining a substantially upright position so that when it is released from the pocket and is permitted to drop upon the floor of the bowling alley it will be caused to assume an upright position properly centered upon its respective spot.

In order that the pin may be automatically released when the device is lowered onto the floor of the alley, a disengaging member indicated in general by the numeral 38, is provided for coaction with the sustaining member 13. The disengaging member comprises a stem 39 which is supported for vertical sliding movement in a guide 40 upon the forward side of the sleeve 7 below the opening 23 and the vertical movement of this stem 39 is in a vertical plane with the sustaining member 13. Normally the member 38 will occupy the lowered position shown in Figure 2 of the drawings, in which position a rearwardly directed shoulder 41 at its upper end, will rest upon the upper side of the guide 40 and thus prevent the member dropping completely from the guide. Likewise in this position, the lower end of the shank 39 will project below the plane of the bottom of the frame 3 as shown in the said figure.

In the use of the device, the same being in an elevated position above the floor of the alley, the pins to be spotted are dropped into the pockets of the several units and will be caused to assume a substantially upright position as shown in Figure 2 of the drawings. When all of the pins have been thus placed, the device is lowered, manually or otherwise, until the projecting lower end of the shanks 39 of all of the members 38 strike the floor of the alley and until the lower side of the frame 1 rests upon the said floor. As the members 38 strike the floor of the alley, they are thrust upwardly and, as will be evident by reference to Figure 3 of the drawings, this will result in an upward and forward displacement of the respective sustaining members 13, with the result that the pins which have previously been sustained by these members, will be relieved of support and permitted to drop to position with their lower ends resting upon the floor of the bowling alley. Upward movement of the entire structure will then permit the units to clear the pins which have previously been sustained therein, and the pins will be left standing in properly spotted relation and in position for playing.

It is preferable that the shank 18 of the sustaining member 13 be provided upon its under side with a shoulder 42 for coaction with the upper end of the member 38 to limit the rearward displacement of the member 13.

Having thus described the invention, what is claimed as new is:

1. A pin setting unit comprising a pin receiving pocket, a pin sustaining member mounted in juxtaposition to the pocket and bodily displaceable, the said sustaining member having at one end a head presented within the pocket and constituting a friction seat for the pin to sustain the same within the pocket and the opposite end of the member resting upon and freely movable on a support spaced from the pocket, and floor-engaging means for supporting and displacing the said sustaining member.

2. A pin setting unit comprising a pin receiving pocket, a pin sustained member mounted in juxtaposition to the pocket and bodily displaceable, the said sustaining member having at one end a head presented within the pocket and constituting a friction seat for the pin to sustain the same within the pocket and the opposite end of the member resting upon and being freely movable on a support spaced from the pocket, means yieldably exerting an endwise thrust upon the last-mentioned end of the sustaining member in the direction of the pocket, and floor-engaging means for displacing the said sustaining member.

3. A pin setting unit comprising a pin receiving pocket, a pin sustaining member mounted in juxtaposition to the pocket and bodily displaceable, the said sustaining member having at one end a head presented within the pocket and constituting a friction seat for the pin to sustain the same within the pocket, a support for the opposite end of said member spaced outwardly from the pocket, the last-mentioned end of the member being freely movable on said support, a spring adjacent said support and bearing against the outer end of the sustaining member to exert an endwise thrust thereon to displace the member in the direction of the pocket and cause it to assume a position for engagement by the pin when the pin is dis-

posed within the pocket, and floor-engaging means mounted on the pocket below the sustaining member for displacing said member.

4. A pin setting unit comprising a bodily displaceable pin receiving pocket, a pin sustaining member mounted in juxtaposition to the pocket and extending outwardly relative thereto, the said sustaining member having at one end a head provided with a relatively fixed transversely concave inclined seating face presented within the pocket and constituting a friction seat for the pin to sustain the same within the pocket, a support for the outer end of said member, said end of the member being freely movable on said support, and floor-engaging means mounted on the pocket below and engaging the sustaining member for displacing said member.

5. A pin setting unit comprising a pin receiving pocket, a bodily displaceable pin sustaining member mounted in juxtaposition to the pocket and extending outwardly relative thereto, the said sustaining member having a unitary head presented within the pocket and constituting a friction seat for the pin to sustain the same within the pocket, the opposite end of said member being freely movably supported at a point spaced from the pocket and a floor-engaging displacing member supported slidably on the pocket beneath the sustaining member for vertical movement into engagement with the under side of said member to displace the same.

6. A pin setting unit comprising a pin receiving pocket, a bodily displaceable pin sustaining member mounted in juxtaposition to the pocket and extending relatively outward therefrom, the said sustaining member having at one end a head presented within the pocket and constituting a friction seat for the pin to sustain the same within the pocket, the opposite end of said member being freely movably supported at a point spaced from the pocket, means engaging the last-mentioned end of the sustaining member and yieldably urging the sustaining member in the direction of the pin within the pocket, and means for limiting the displacement of the sustaining member in such direction.

7. A pin setting unit comprising a pin receiving and encircling pocket having an opening in its wall, a pin sustaining member mounted in juxtaposition to the pocket and bodily displaceable, the said sustaining member having at one end a head presented within the pocket through the said opening in the wall thereof and provided with a shoulder on said head for engagement behind the wall, the said head of the sustaining member constituting a friction seat for the pin to sustain the same within the pocket, and floor-engaging means mounted on the pocket below the sustaining member for displacing the said sustaining member.

8. A pin setting unit comprising a pin receiving pocket, means for sustaining a pin within the pocket, opposed engaging members at the upper portion of the pocket for coaction with the stem of the pin to support the pin in upright position, means yieldably holding the members in coactive relation, and a stop between said members.

9. A pin setting unit comprising a pin receiving pocket, means for sustaining a pin within the pocket, opposed engaging members mounted above the pocket for coaction with the opposite sides of the stem of a pin disposed within the pocket, and means yieldably holding the members in coactive relation.

10. A pin setting unit comprising a pin receiving pocket, means for sustaining a pin within the pocket, opposed engaging members mounted above the pocket for coaction with the opposite sides of the stem of a pin disposed within the pocket, and means yieldably holding the members in coactive relation, said members having outwardly deflected terminal portions constituting a throat for the introduction of the stem of the pin therebetween.

In testimony whereof I affix my signature.

OLE H. OLSEN.