H. J. ANDERSON.

PIN SETTER.

APPLICATION FILED JAN. 20, 1913.

1,149,318.

Patented Aug. 10, 1915.

3 SHEETS—SHEET 1.

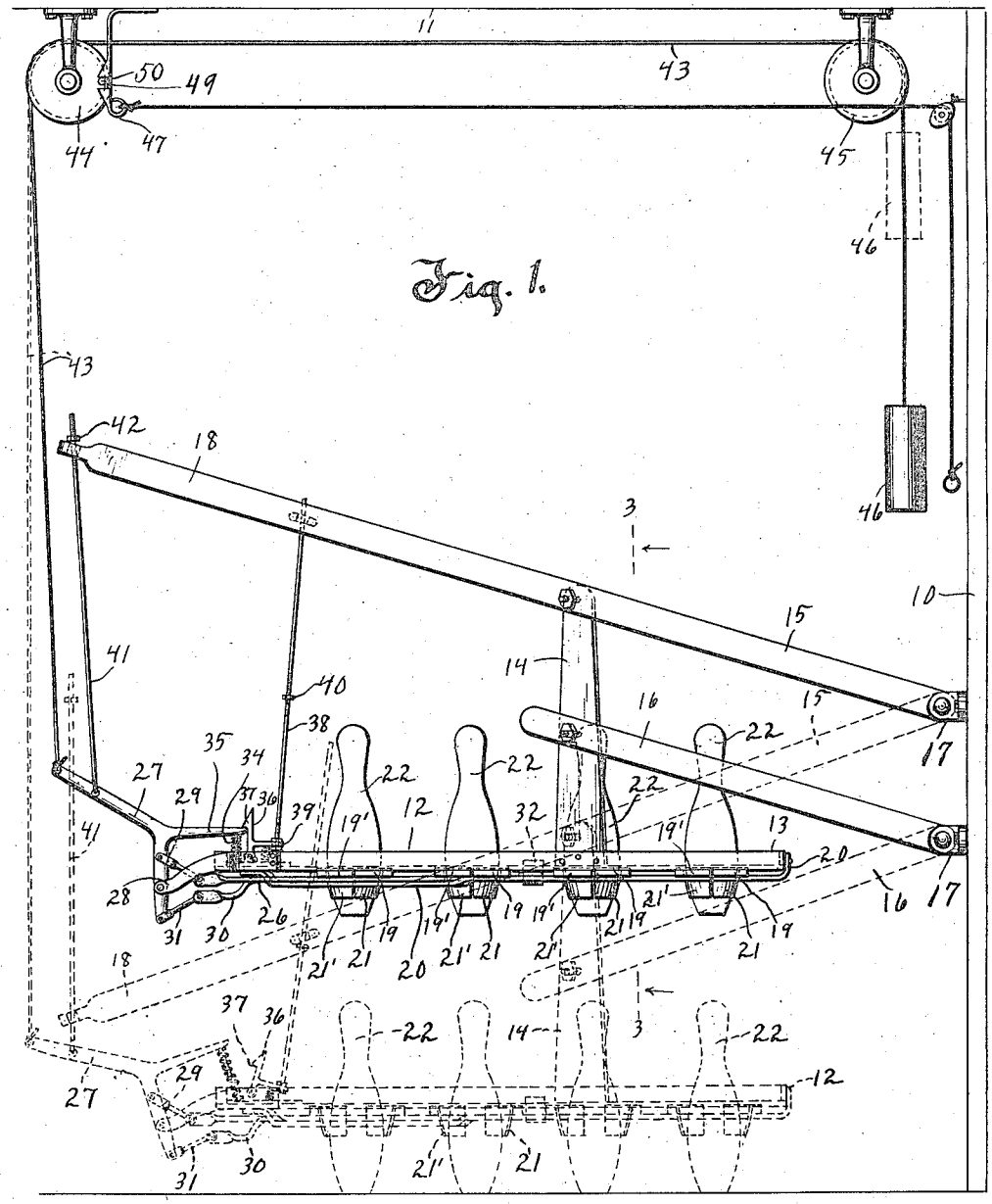


Fig. 1.

WITNESSES.

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3 SHEETS—SHEET 2.

Fig. 7.

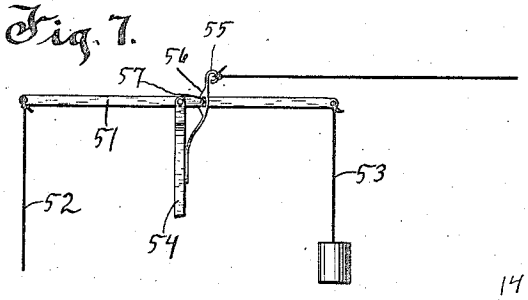
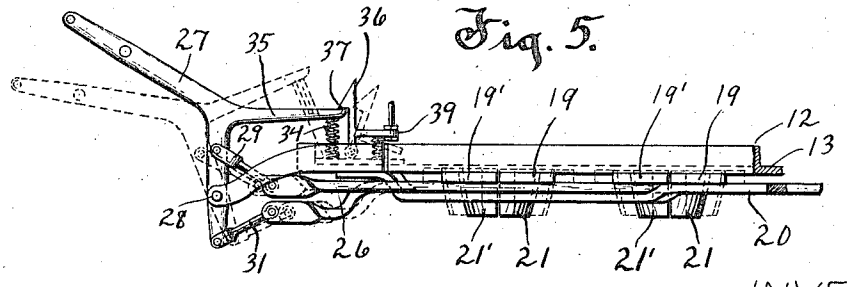


Fig. 2

Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 3.

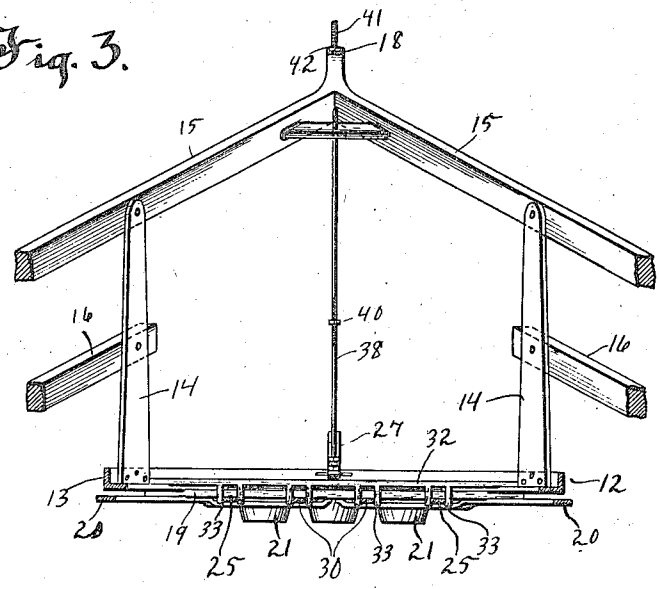


Fig. 4.

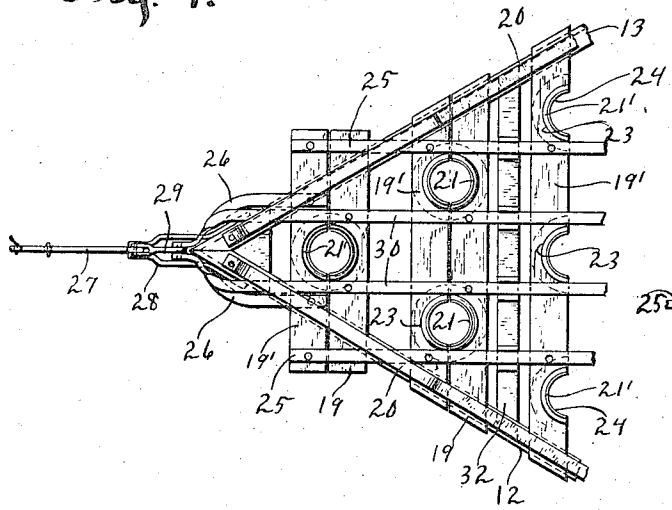
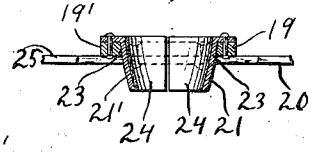


Fig. 6



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UNITED STATES PATENT OFFICE.

HANS J. ANDERSON, OF LAKEMILLS, WISCONSIN, ASSIGNOR OF ONE-HALF TO GEORGE W. CARLETON, OF LAKEMILLS, WISCONSIN.

PIN-SETTER.

1,149,318. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed January 20, 1913. Serial No. 743,017.

To all whom it may concern:

Be it known that I, HANS J. ANDERSON, a citizen of the United States, and resident of Lakemills, in the county of Jefferson and State of Wisconsin, have invented new and useful Improvements in Pin-Setters, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in pin setters of the automatic type for setting tenpins.

One of the objects of the present invention is to provide a pin setter which will automatically set the pins placed therein when the lowering mechanism is released and after the pins are set the lowering mechanism will return to its upper receiving position.

A further object of the invention is to provide a pin setter which will automatically adjust itself to pin holding position when swung upwardly and which will securely hold the pins inserted therein until again lowered.

A further object of the invention is to provide a pin setter which is of simple construction, is well adapted to withstand the hard usage to which it is ordinarily subjected and which may be manufactured at a minimum cost.

With the above and other objects in view, the invention consists of the improved pin setter and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views: Figure 1 is a side view of the improved pin setter shown in its upper position with the pins within the holders, the view also indicating by dotted lines the lower position of the setter; Fig. 2 is a plan view of the pin setter; Fig. 3 is a transverse sectional view thereof taken on line 3—3 of Fig. 1; Fig. 4 is a fragmentary inverted bottom view of the front portion of the pin setter; Fig. 5 is a fragmentary side view of the front portion of the pin setter on a larger scale, the pin holding members also being indicated in open position by dotted lines; Fig. 6 is a sectional detail view of one of the pin setters; and Fig. 7 is a side view of a modified form of means for raising and lowering the pin setter.

Referring to the drawings the numeral 10 indicates the vertical and 11 the horizontal portion of the frame or support to which the improved pin setter 12 is attached. This frame or support may be the ceiling and one of the side walls of a room or any other support desired may be used. The pin setter comprises a horizontal triangular pin frame member 13 formed of angle iron and is provided with two standards 14 extending upwardly from the opposite sides thereof to which are pivotally connected parallelogram arms 15 and 16. In vertical plane the arms on each side are parallel with relation to each other and their rear ends are pivoted to ears 17 projecting forwardly from the support 10. These arms with the standards and the support form a parallelogram connection between the triangular member and the support and provides for said member always remaining in a horizontal plane while swinging from its setting position to its receiving position. The upper arms 15 are extended forwardly and converge toward each other at the same angle as the triangular member and are connected together at their ends as indicated by the numeral 18.

Pairs of pin holding members 19 and 19′ extending transversely across and beneath the triangular member are supported on straps 20 which are carried by the said triangular member. These transverse pin holding members are laterally, slidably mounted upon the straps 20 and are provided with pairs of pin holders which are shaped to conform to the contour of the tenpins 22 for a portion of their length. Each pair of pin holders consist of two half sections 21 and 21′ which are connected to the opposite edge portions of the pin holding members 19 and 19′. The opposite edge portions of the said members 19 and 19′ are recessed as indicated by the numeral 23 to accommodate the curved portions 24 of the holders. When the two sections of each holder are positioned close together they form a circular holder open at both ends and of less diameter at its lower end than at its upper end and as the lower diameter is less than the medial diameter of the tenpin the tenpin will be held securely in the holder when in the position just described.

All of the pin holding members 19′ are connected together by means of the longitudinal connecting strips 25 and the forward

member is provided with forwardly projecting curved strips 26 which are pivotally connected to the three arm lever 27 carried by the triangular frame. This three arm lever is pivotally mounted between the forwardly projecting portions 28 of the triangular frame and the strips 26 are connected to the arm lever at a point above its pivotal connection with the triangular frame by means of a connecting link 29. The holding members 19 are also all connected together by longitudinal strips 30 which at their forward ends are pivoted to the lower end of the three arm lever by a connecting link 31 so that when the three arm lever is moved in one direction the opposite movements of the strips will separate the holding members and permit the pins held thereby to be discharged and when moved in the other direction the holders will be in pin holding position. The longitudinal holder strips are held in proper position by means of the transverse strip 32 which is provided with depending fingers 33 positioned in pairs on opposite sides of the longitudinal strips. The transverse strip also serves to prevent the endwise movement of the holding members. In order to move the holding members quickly to open position when the setter has approximately reached its lowermost position a coiled spring 34 interposed between the horizontal arm 35 of the three arm lever and the triangular frame is provided which will actuate the said three arm lever to separate the holding members and release the tenpins.

A spring retrieved bell crank dog 36 pivoted on the triangular frame is provided with a shouldered portion 37 under which the outer end of the arm 35 snaps and is locked in pin-holding position. The arm 35 is released from engagement with the dog 36 by a releasing rod 38 having its lower end connected to the horizontal arm 39 of the bell crank dog and its upper end portion slidably connected to the parallelogram arms 15. A stop nut 40, adjustably threaded on the rod 38, is adapted to be engaged by the arm 15 moving toward its lowermost position and swing the dog out of engagement with the three arm lever.

The holding members are moved to closed positions through their connection with the three arm lever by means of a closing rod 41 which is pivoted at its lower end to the outer end portion of the three arm lever and at its upper end has a slidable connection with the forward end of the parallelogram arms 15. This closing rod 41 has a nut 42 adjustably threaded on its upper end which is engaged by the said arms 15 in swinging to their upper position, and this engagement will positively move the three arm lever and the pin holding members to closed positions.

The pin setter is swung to its upper position by means of the rope 43 which is attached to the three arm lever 27 at its lower end and from this point the rope extends upwardly and over pulleys 44 and 45 and at its opposite depending end is provided with a counterweight 46. The counterweight while sufficient to pull up the setter without the pins is overbalanced by the weight of the pins when inserted in the setter. When the empty setter is swung to its upper position it is held by a spring latch 47 and controlled by a cord 48 extending to a convenient point of operation.

The spring latch is provided with a holding recess 49 into which a pin 50 projecting from one side of the pulley 44 enters, and the edges of the latch leading to the recess are inclined to permit the easy entrance of the pin into said recess. This pin and recess construction also serves as a stop to limit the upward travel of the setter.

In the modified form shown in Fig. 7 the setter is swung upwardly by the lever 51 which is connected at one end to the three arm lever by the rope 52 and at its other end is provided with a counterweight 53. The lever is pivoted to an upstanding frame or other support 54 and this support is provided with a spring dog 55 having a recessed portion 56 which is engaged by a pin 57 projecting from the side of the lever 51 in substantially the same manner as the latch of the principal form described. A string 58 leading to a convenient point is provided for tripping the dog.

In operation the setter swings to its upper position and is held by the recessed dog. In this position the holding members are closed and held locked by the bell crank dog engaging the three arm lever. Tenpins are now inserted in the pin holders and will be held thereby. The rope is now pulled to release the spring dog and the combined weight of the setter and the pins will overbalance the counterweight and the setter will swing downwardly. In swinging downwardly the distance between the triangular frame and the outer end portion of the upper parallelogram arm will decrease in length and when almost at their lowest points the upper arm will strike the nut of the releasing rod and release the three arm lever and permit its spring to move the pin holders to open position. The setter is now relieved of the weight of the pins and the counterweight will swing the setter to its upper position and in swinging to its upper position the forward end of the upper arm will engage the nut of the closing rod and swing the three arm lever to close the pin holders and the setter is again in position to receive the pins and be again actuated in the manner before described.

From the foregoing description it will be

seen that the pin setter is of very simple construction and is well adapted for the purpose desired.

What I claim as my invention:

1. A pin setter comprising a pin frame swingingly mounted upon a support and normally held in upper position, pin holding members slidably connected to said frame, and means, actuated when said frame is swung downwardly, for releasing the pins held by the pin holding members.

2. A pin setter comprising a pin frame, means for swingingly supporting said frame, means for normally holding said frame in upper position, pin holding members slidably connected to said frame for releasably securing the pins therein, said pin frame adapted to be swung to a lower position by the weight of the pins inserted therein, and means controlled by said supporting means for operating said pin holding members when said frame reaches its lower position.

3. A pin setter, comprising a pin frame, a member pivotally connecting the pin frame to a support, said member holding the pin frame in a horizontal plane while moving to its different positions, means for moving the pin frame to its upper position when relieved of the weight of the pins, pairs of pin holding members slidably connected to the pin frame and adapted to slide toward each other in pairs to pin holding positions, means for locking the pin holding members in holding positions, said pin frame adapted to be moved to its lower position by the weight of the pins inserted in the holding members, and means controlled by the pivotal member for unlocking the pin holding members to release the pins when the pin frame is moved downwardly.

4. A pin setter comprising a pin frame, a member pivotally connecting the pin frame to a support, said member holding the pin frame in a horizontal plane while moving to its different positions, means for moving the pin frame to its upper position when relieved of the weight of the pins, pairs of pin holding members slidably connected to the pin frame and adapted to slide toward each other in pairs to pin holding positions, a longitudinally movable strip connecting one of the holding members of each pair together, means for locking said strip in one of its positions, and means controlled by the pivotal member for releasing said strip when the pin frame is swung downwardly.

5. A pin setter, comprising a support, a pin frame, a parallelogram connection between the pin frame and the support, pin holding members slidably connected to the frame and provided with pin holders, means for moving the pin frame to an upper position when relieved of the weight of the pins, said pin frame adapted to be swung to its lowermost position by the weight of the pins inserted in the pin holders, and means controlled by the parallelogram connection for actuating the pin holding members to release the pins when the frame is moved downwardly.

6. A pin setter, comprising a support, a pin frame, a parallelogram connection between the pin frame and the support, pairs of pin holding members slidably carried by the pin frame and provided with pin holders, means for moving the pin frame to an upper position when relieved of the weight of the pins, said pin frame adapted to be moved to its lower position by the weight of the pins inserted in the pin holders, a longitudinally movable strip connecting one of the members of each pair of pin holders together, another longitudinally movable strip connecting the other members of each pair of pin holders together, means controlled by the parallelogram connection for moving the strips in opposite directions to open or close the holding members, and means for locking the strips in closed position.

7. A pin setter, comprising a support, a pin frame, a parallelogram connection between the pin frame and the support, pairs of pin holding members slidably carried by the pin frame and provided with pin holders, means for moving the pin frame to an upper position when relieved of the weight of the pins, said pin frame adapted to be moved to its lower position by the weight of the pins inserted in the pin holders, a longitudinally movable strip connecting one of the members of each pair of pin holders together, another longitudinally movable strip connecting the other members of each pair of pin holders together, a lever carried by the pin frame and having a pivotal connection with the strips, a spring actuated dog carried by the pin frame for locking the lever in one of its positions, and means actuated by the downward movement of the pin frame for releasing the lever from engagement with the dog.

In testimony whereof, I affix my signature, in presence of two witnesses.

HANS J. ANDERSON.

Witnesses:
E. C. BROWN,
O. B. COOMBE.