Nov. 24, 1931. J. C. BACKUS 1,833,814

PIN CLAMP FOR PIN SETTING APPARATUS

Filed March 27, 1928

Fig. 1.

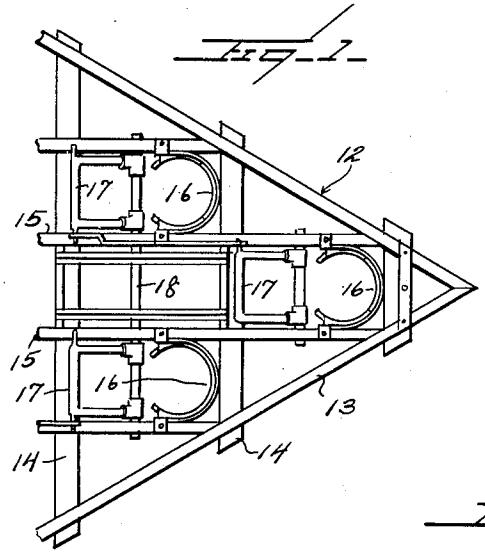


Fig. 2.

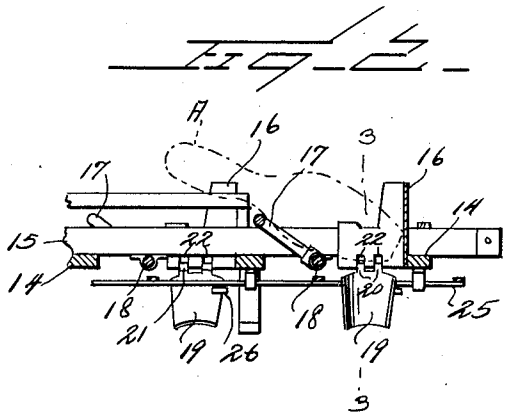


Fig. 6.

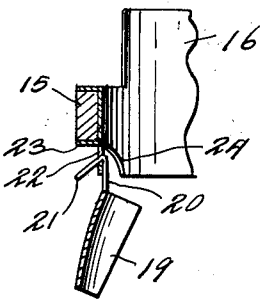


Fig. 4.

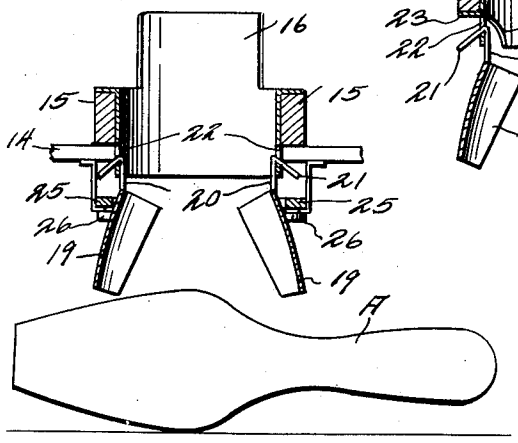
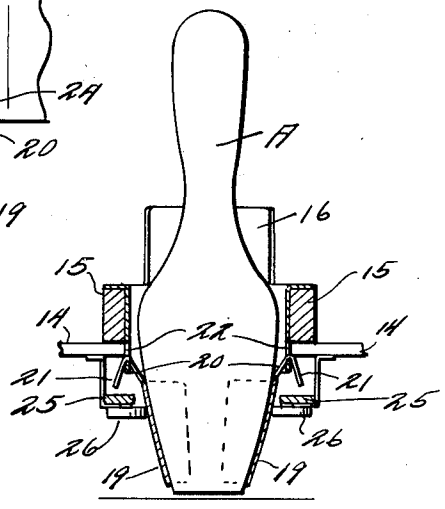


Fig. 3.



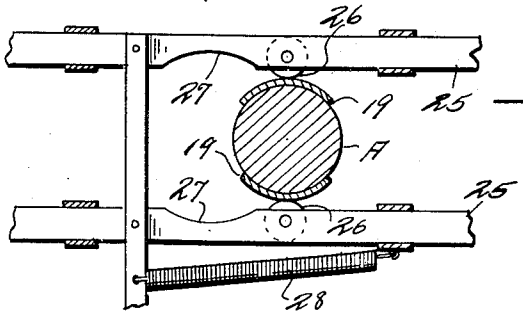


Fig. 5.

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Patented Nov. 24, 1931

1,833,814

UNITED STATES PATENT OFFICE

JOHN CLAYTON BACKUS, OF SMETHPORT, PENNSYLVANIA; HAMLIN BANK & TRUST COMPANY AND FRED BIEVER, OF SMETHPORT, PENNSYLVANIA, EXECUTORS OF SAID JOHN CLAYTON BACKUS, DECEASED

PIN CLAMP FOR PIN SETTING APPARATUS

Application filed March 27, 1928. Serial No. 265,174.

This invention relates to apparatus for setting and spotting the pins of bowling alleys, and particularly to certain improvements upon the pin clamping mechanism shown in my application for patent Serial #122,434, filed July 14, 1926, on pin setting apparatus.

In the pin setting apparatus shown in this prior application for patent, and particularly shown in Figures 3 and 6 thereof, there are provided a plurality of pairs of pin clamps which depend from certain pin stops and which are curved to conform to the shape of the basal portions of the pins so that when the pins are uprighted they will seat within said pin clamps, these pin clamps being hinged to a supporting frame and depending below the supporting frame.

In the operation of the mechanism shown in my prior application above referred to, these pin clamps are gradually released when the lower ends of the pins are disposed in a very slightly spaced relation from the floor so that the pins will settle very gradually downward and come to rest without jar or noise upon the alley bed. The pin carrier which supports the clamps is then hoisted into position above the alley and out of the way of play.

The pin clamps as illustrated in my prior application have this objection, that they are likely to hit or contact with "dead wood", that is, a pin which has been knocked down and which may have accidentally rolled into position beneath the descending clamp, and this causes the pin clamp to be shoved up through the frame two or three inches before the pin clamping mechanism starts to close.

The object of the present invention is to so connect the pin clamping members to the supporting frame thereof that if by chance they should strike any "dead wood" on the alley bed, they will move upward independently of the frame or any other part of the carrier and will become disengaged from the frame, thus preventing the pin clamp from being damaged.

A further object is to provide pin clamps of the character illustrated in my prior application detachably engaged with the supporting frame so that they can be packed separately for shipment and then after the pin setting mechanism is erected, the clamps may be readily engaged therewith and hooked into place in an instant.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a fragmentary top plan view of a pin setting mechanism constructed in accordance with my invention;

Figure 2 is a fragmentary longitudinal sectional view thereof;

Figure 3 is a section on the line 3—3 of Figure 2 but showing the pin raised;

Figure 4 is a sectional view on the same line showing the pin clamps open and about to contact with a "dead wood" pin;

Figure 5 is a fragmentary top plan view of the clamp closing mechanism, the pin and the clamps being shown in section;

Figure 6 is a fragmentary sectional view on the same line as Figure 4 but showing a modified form of the clamp supporting means.

In the drawings, I have illustrated so much of the pin setting mechanism of my prior application as is necessary for an understanding of the present invention, it being understood that I have not attempted to illustrate the complete pin setting mechanism but only such part of it as relates to the present invention.

In the drawings, 12 designates a pin carrier which consists of a frame approximately triangular in form and including oppositely inclined side members 13. A plurality of parallel cross members 14 connect the side members 13, and a plurality of longitudinal bars 15 are disposed between the side members 13 of the frame. These bars are located in the plane of the members 13 and constitute a part of the carrier frame and provide supporting means for the pin shifter and coordinate parts. Pin stops and guides 16 of sheet metal are attached to the longitudinal bars 15 and are arranged to coincide with the position of the pins when properly set upon the alley. These guides and stops are preferably of sheet metal and they are approximately circular in plan to conform to the major diameter of the pins and to permit the pins to

freely pass therethrough when the pins are discharged upon the alley.

The pin stops and guides do not extend around through a complete circle but are cut away at the rear to provide clearance for the pins when initially placed upon the carrier, as shown in dotted lines in Figure 2, and the pins move from the recumbent position shown in dotted lines to an uprighted or vertical position under the action of a plurality of pin uprighting members, designated generally 17, these being mounted upon transverse shafts 18. These shafts are actuated automatically, as fully described in the specification of my prior application, when the carrier has descended to a predetermined distance from the bed of the alley.

Associated with each of the pin stops and guides 16 are a pair of pin clamps 19 and the clamps of each pair are disposed at opposite sides of the respective pin stops 14 and are operatively hinged either to the stops 16, as shown in Figure 3, or to the longitudinally extending bars 15, as in Figure 6. The clamps 19 are curved transversely to conform to the diameter of the pins so as to grip the sides thereof to insure a proper spotting of the pins when discharged upon the alley. The clamps are also so formed that when the clamps are depending freely, they are downwardly and outwardly inclined from a perpendicular plane. These clamps are preferably formed of sheet metal.

For the purpose of hingedly supporting the clamps so that the clamps of each pair may swing inward against the pin to be supported or swing outward so as to entirely free the pin and allow it to descend upon the alley bed, I form each of the clamps 19 with an upwardly extending tongue 20 which is bent outward and downward to form a hook 21.

In Figure 4, I have illustrated the pin stop and guide 16 as extending downward slightly below the longitudinal bar 15, and immediately below this bar 15 the pin stop or guide is formed with pivotally disposed apertures 22 through which the hooks 21 pass and thus the clamps 19 are swingingly supported for movement toward or from the pin. The bill of the hook 21, it will be noted, extends straight downward and outward so that if by chance the clamp 19 be lifted upward, as by contact with "dead wood", that is, a pin accidentally lying upon the alley bed, the clamp will move upward through the vertically elongated opening 22 and the inclined bill, contacting with the member 14 and the upper edge of the opening 22, will move upward and inward until, if the lift given to the clamp be sufficient, the hook 21 will become entirely detached from within the opening 22 and the clamp will be entirely freed from its engagement with the pin stop and guide 19.

While preferably I extend the pin stop or guide 19 below the bar 15 and from the aperture 22 in this pin stop or guide, yet in Figure 6 I have illustrated a member 23 as being attached to the under face of the bar 15 and as having therein the opening 22, and have illustrated the lower portion of the pin stop and guide as being cut away at 24 to accommodate this member 23. It will be obvious that the same operation is provided for in this construction as in the construction previously described, that when the clamp strikes any object as, for instance, "dead wood", the clamp will lift and the inclined face of the bill of hook 21 will cause the hook to move upwardly and laterally out of engagement with the supporting member 23 and the clamp will become entirely detached from the frame member or bar 15.

This construction will prevent the clamp from being damaged upon striking any "dead wood". Furthermore, the clamps can be readily separated from the pin setting mechanism proper, that is, the supporting frame of the carrier and packed separately for shipment and then after the pin setter has been erected, the hooks of the clamps may drop down through the frame and be hooked into place through the apertures 22 in an instant.

I have not illustrated all of the operating mechanism for the clamps which causes these clamps to automatically close inward to receive a pin and automatically open to permit the pin to descend through the clamps, but the operating means for these clamps consists of longitudinally extending frame bars 25 which are longitudinally movable upon the carrier and, as illustrated in Figure 5, are provided with rollers 26 for contacting with the clamps and, by riding against the curved faces of the clamps, causing the clamps to close. Just rearward of the roller 26, the frame bars 25 are cut away, as at 27, so that as the frame bars 25 move rearward, as in Figure 5, the rollers 26 will engage the clamps to shift them inward against the pins A, but that when the frame bars 25 move forward under the action of a spring 28, the clamps will swing outward and open up and permit the descent of the pins. The automatic action of the pin setting apparatus which causes the movement of the pin uprighting members and of the clamp actuating bars 25 is fully set forth and described in my prior application and hence requires no description here.

One of the advantageous features of this automatically detachable pin clamp is as follows: Every once in a while a bowler will get excited and throw the ball just as the pin setter has been released and the ball will arrive at the front end of the pins at the time that the pin setter has dropped the butts of the pins a little lower than the diameter of the ball and the ball will then cause damage to one or more of the pin clamps. In this

case, the pin boy can reach down through the pin hole, lift out the damaged clamp, and drop in a new one so quickly that there will be no stopping of the game and no interference with the bowlers. On all other pin setters known to me, to change a pin setting device it is necessary to crawl under the machine and go through a more or less time-consuming process, thereby delaying the game to the annoyance of the players and to the monetary loss of the proprietor.

I claim:—

1. In a pin setting apparatus, a vertically movable pin carrier through which the pins are adapted to pass, pin clamps depending below the carrier in the path of the pins, pivots for the clamps mounted on the carrier, each pin clamp having at its upper end an upwardly and laterally directed hook to separably engage the pivots so that the clamps may be demounted by pressure from below.

2. In a pin setting apparatus, a vertically movable pin carrier, pin guides and stops mounted upon the carrier, a pair of clamps disposed beneath each stop for receiving the butt ends of the pins, and means detachably connecting each clamp to the carrier comprising a member having a vertically elongated opening, and a hook mounted upon the upper end of each clamp, the bill of the hook extending downwardly and laterally through said opening whereby to permit the clamp to move upward independently of the carrier when the clamp strikes an obstruction and to be detached from the supporting member upon a further upward movement of the clamp.

3. In a pin setting apparatus, a vertically movable pin carrier, a pin stop thereon partially circular in plan view, the side walls of the pin stop being formed with openings, and pin clamps disposed below the pin stop, each clamp having at its upper end a hook formed with a laterally and downwardly projecting bill extending through one of said openings and adapted to engage the upper wall of said opening whereby if the clamp strikes an obstruction upon the downward movement of the carrier it will rise relative to the carrier and become detached therefrom.

4. In a pin setting apparatus, a vertically movable pin carrier, pin clamps depending from the carrier, and separable means operable by pressure in the line of movement of the carrier for detachably supporting the clamps from the carrier.

5. In a pin setting apparatus, a movable pin carrier through which the pins are adapted to pass, pin clamps below the carrier in the path of movement of the pins, pivots on the carrier for the pin clamps, hooks having inclined rear surfaces on the pin clamps engaging the pivots on the carrier so that the inclined rear surfaces of the hooks are beyond the plane of the pivots, whereby pressure upon the pin carriers from below will raise the pin clamps from off their pivots.

6. In a pin setting apparatus, a vertically movable pin carrier, stops for the pins mounted on the pin carrier, pivots carried by the pin carrier, pin clamps, and open hooks having inclined upper surfaces carried by the pin clamps and engaging over the pivots of the carrier, whereby pressure from below upon the pin clamps will lift the same from off their pivots.

In testimony whereof I hereunto affix my signature.

JOHN CLAYTON BACKUS.