

June 13, 1933.

B. S. IGOU

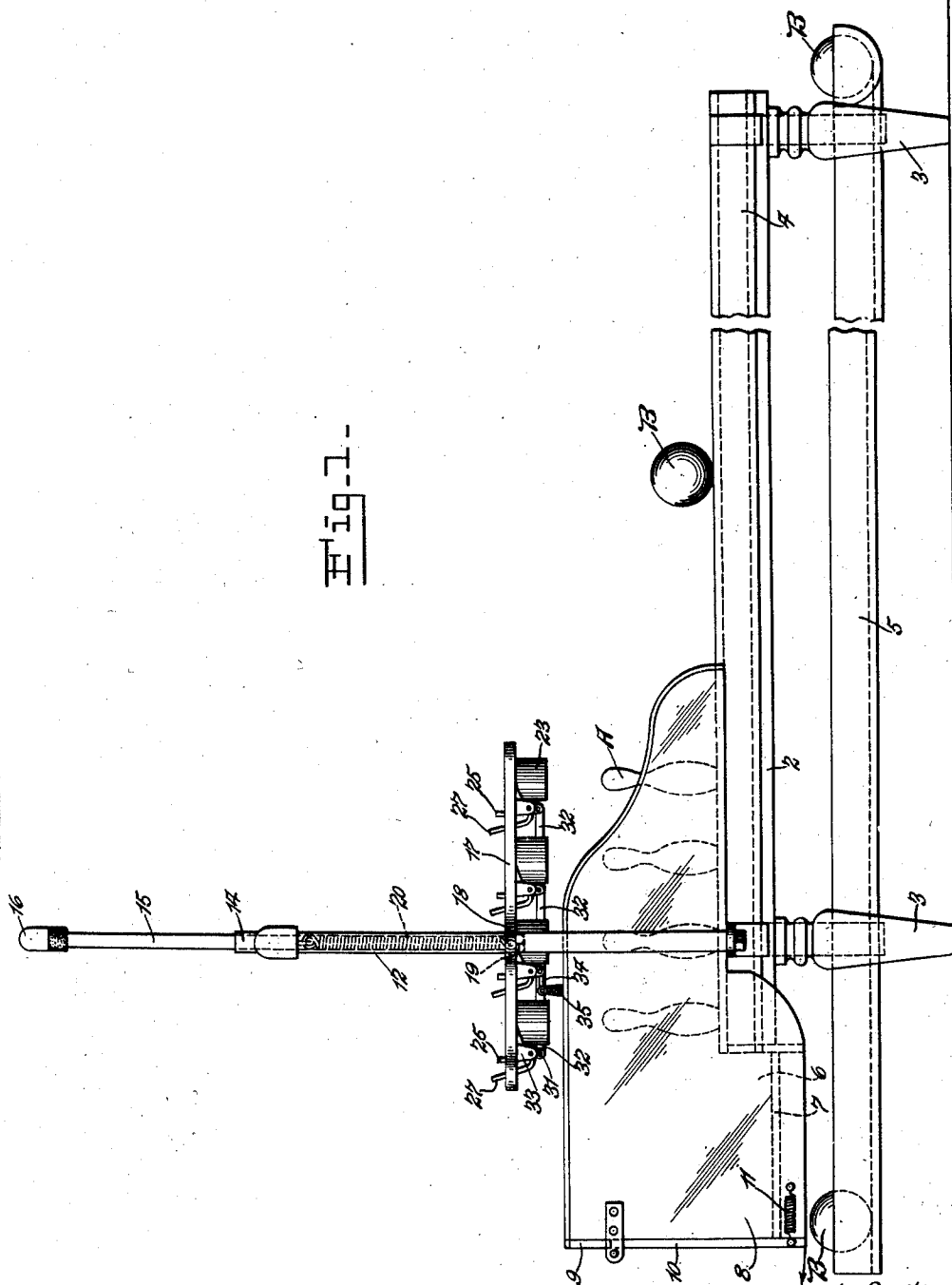
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PIN SETTING DEVICE

Filed Oct. 31, 1931

3 Sheets-Sheet 1

Fig. 1.



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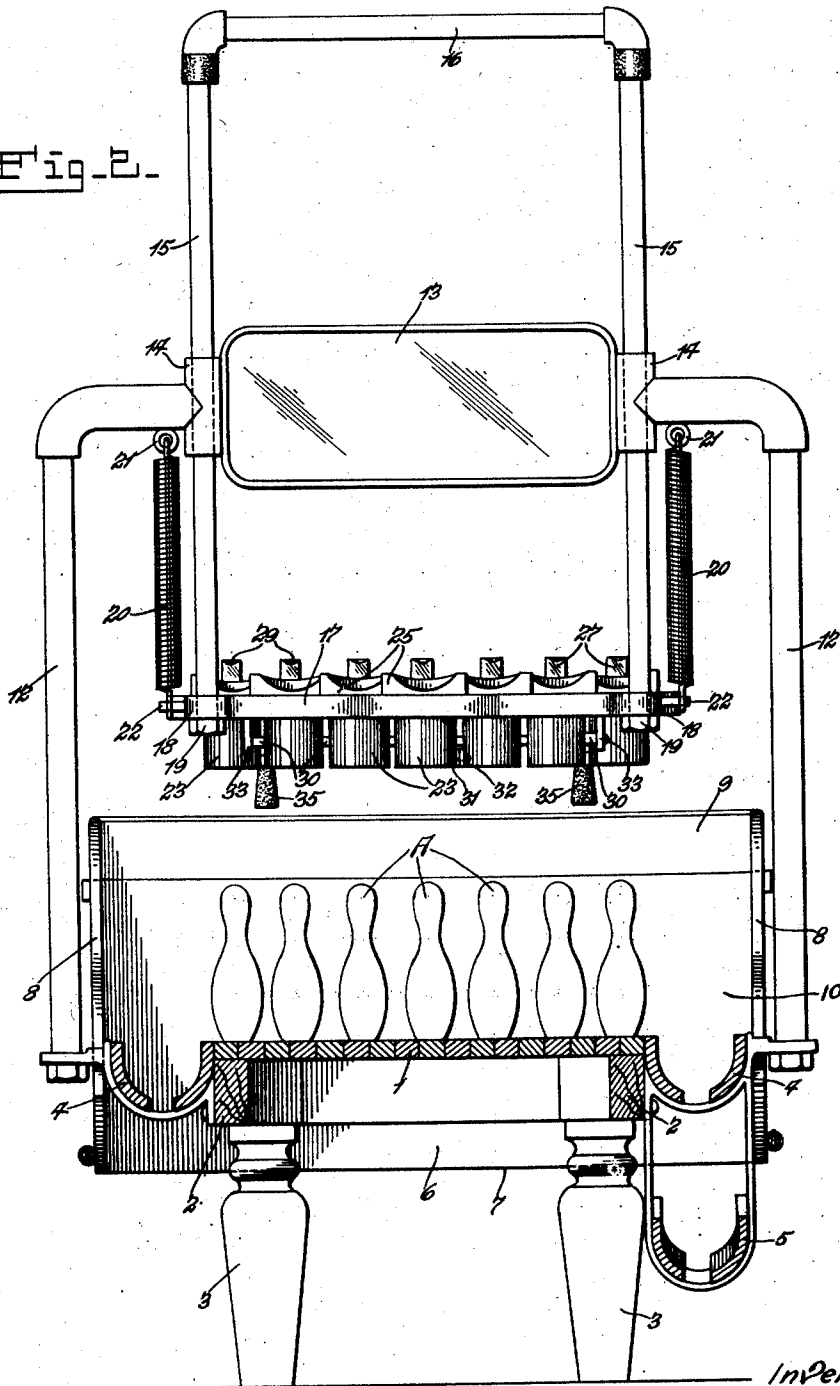
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Fig. 2.



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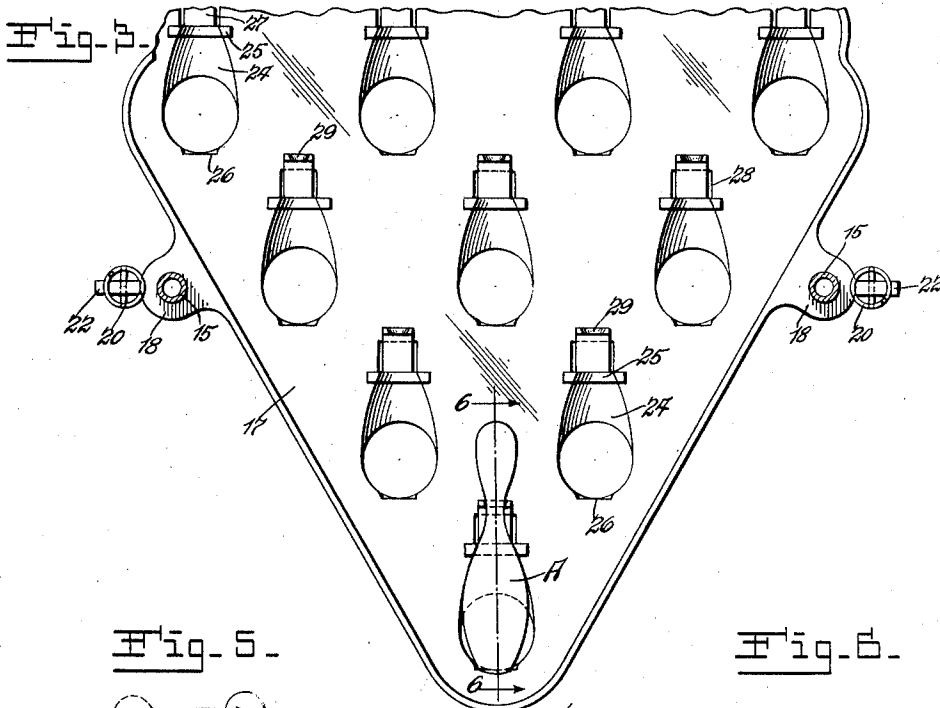
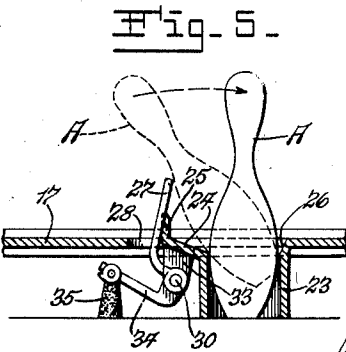
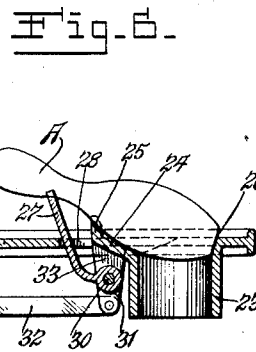
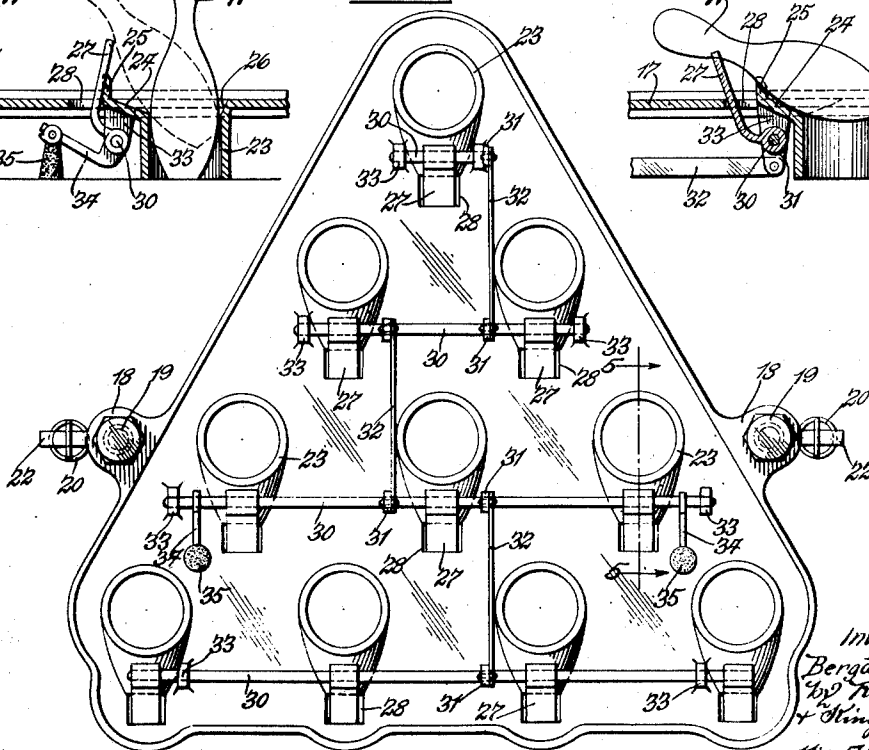
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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PIN SETTING DEVICE

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This invention relates to pin setting devices for bowling alleys.

One of the objects of this invention is to provide a device having a suitable holder or template in which the pins may be arranged in other than vertical position, means whereby the template may be lowered to an alley, and tripping mechanism for upending and releasing the pins in such a manner that the pins will be set in proper arrangement on the alley and in an upright position.

Other objects will be apparent from the following detail description taken in connection with the accompanying drawings, in which—

Fig. 1 is a side elevation of the device.

Fig. 2 is a front elevation.

Fig. 3 is a plan view of the holder or template.

Fig. 4 is an inverted plan view of the holder or template.

Fig. 5 is a detail sectional view of the tripping mechanism.

Fig. 6 is a detail sectional view on line 6—6, Fig. 3.

While it is to be understood that the pin setting mechanism may be used and is adapted to be used in connection with regulation bowling alleys, the drawings, for convenience, show it arranged in connection with a portable alley.

Before a detail description of the device is made a brief general description will assist in understanding the construction and operation of the device. It will be understood, of course, that the game of tenpins is played upon an alley constructed of hardwood at the rear of which a series of pins A are set in conventional position. A ball B is bowled along the alley with the intent of knocking down as many pins as possible. It is necessary then, of course, to reset the pins. The device embodying this invention includes a holder or template, which is normally positioned above the rear of the alley and above the proper location of the pins. The upper surface of the template is arranged to hold the pins in other than a vertical position but above a guide which serves, when the template is lowered, to accurately position the

pins. Mechanism is provided and arranged in such a manner that when the template is lowered the pins are upended to a vertical position. Thus when the template is lowered the pins, which have been placed upon the template in position slightly inclined from the horizontal, are tripped and pass through their respective guides in a vertical position and are thereby caused to be properly positioned on the alley.

An alley 1 is preferably constructed of polished hardwood which, as shown in the particular embodiment illustrated in the drawings, rests upon longitudinal beams 2 and is supported by legs 3. Gutters 4 are provided on each side of the alley to direct the ball when it rolls off the alley and a trough 5 is provided for the return of the ball.

A pit 6 is provided at the rear and has a floor 7, side aprons 8, a transverse member 9 and a hinged backboard 10. The backboard 10 is held resiliently in closed position by springs 11. The pin setting device is positioned at the rear of the alley and in front of the pit. It includes a rigid frame having vertical side members 12 and a cross member 13. The cross member 13 includes bosses 14 constituting vertical guideways for reciprocating mechanism which includes vertical side members 15 projecting through and reciprocating in the bosses 14.

The vertical reciprocating members 15 are connected at their tops by a handle bar or cross member 16. The reciprocating members 15 support from their bottom a pin holder or template 17. Ears 18 are provided on the template, preferably cast integral with it, by which the template may be secured to the members 15. Stud bolts 19 pass through holes in the ears 18 and have engagement with internal threads in the members 15.

The mechanism is counterweighted by springs 20 each of which has its upper end secured to a ring 21 depending from the cross member 13 and its lower end secured to a lug 22 projecting from an ear 18 on the template.

The template is provided with a series of depending cylindrical guideways 23 by

means of which the pins are caused to assume an upright position and by means of which the pins are properly located on the alley.

5 The top of the template is provided with beds above the guide members 23 so fashioned as to support the pins in a position slightly inclined from the horizontal, as best shown in Fig. 6. Each of the beds includes
10 a concave portion 24, a shoulder 25 and a bevelled portion 26.

Mechanism is provided to act, when the template has been lowered, in such a manner as to upend the pins from their inclined position causing them to fall through the guides
15 23, and assume an upright position in their proper location on the alley. This mechanism includes arms 27 pivotally mounted, in a manner which will hereafter be described, on
20 the bottom of the template and projecting through openings 28 in the template in such a position as to engage the shank of the pin. The top of each arm 27 has a concave portion 29, as best shown in Fig. 3, to conform to the
25 shank of the pin.

Each of the arms 27 is secured to a rockshaft 30 and rotates with it. One or more arms 27 may be secured to the same rockshaft 30, as best shown in Fig. 4. Each rockshaft 30 has a crank 31 and the several rockshafts 30 are connected together by links 32. The rockshafts 30 are mounted for rotation in lugs 33 depending from the template 17. One or more arms 34, two as shown in the
35 drawings, are secured to a rockshaft 30; a shoe 35 is pivotally connected to the end of each arm 34 and is so arranged that when the template 17 is lowered the shoe or shoes 35 engage the alley, rocking the appertinent
40 rockshaft 30 and through the links 32 the remaining rockshafts 30, thereby moving the arms 27 and thus upending the pins, as illustrated in Fig. 5.

It will thus be seen that mechanism simple
45 in construction and operation has been provided to attain the objects of this invention. It will be obvious that parts of the invention may be used without the whole and that
50 various changes may be made in the details of construction, within the scope of the appended claims, without departing from the spirit of this invention.

I claim:

55 1. In combination with an alley, a device of the class described including a template, means by which to vertically reciprocate the template, means on the template adapted to support a pin in other than vertical position,
60 a rockshaft supported from the template, an arm adapted to engage and upend the pin and secured to the rockshaft, a lever on the rockshaft, a shoe secured to said lever and positioned to strike the alley when the template
65 is moved to lowermost position whereby the

rockshaft is rotated and the arm is caused to upend the pin.

2. In combination with an alley, a device of the class described including a template having spaced beds to receive pins in other
70 than vertical position and openings adjacent said beds through which the pins may respectively drop when upended, guides depending from the template below said openings, a series of parallel rockshafts on the
75 template, connections whereby movement of one rockshaft will move all of the shafts, arms secured to the rockshafts adjacent the beds and adapted to engage the pins and upend them, and a crank secured to one of the
80 rockshafts for engagement with the alley when the template is moved to lowermost position.

3. A device of the class described including a template, means by which to vertically reciprocate the template, beds arranged adjacent spaced openings on the template and each comprising a concave portion on the
85 template and a bevel portion on the periphery of the opening, a guide depending from the template below each opening, and means operable upon movement of the template to lowermost position to upend the pins.

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