

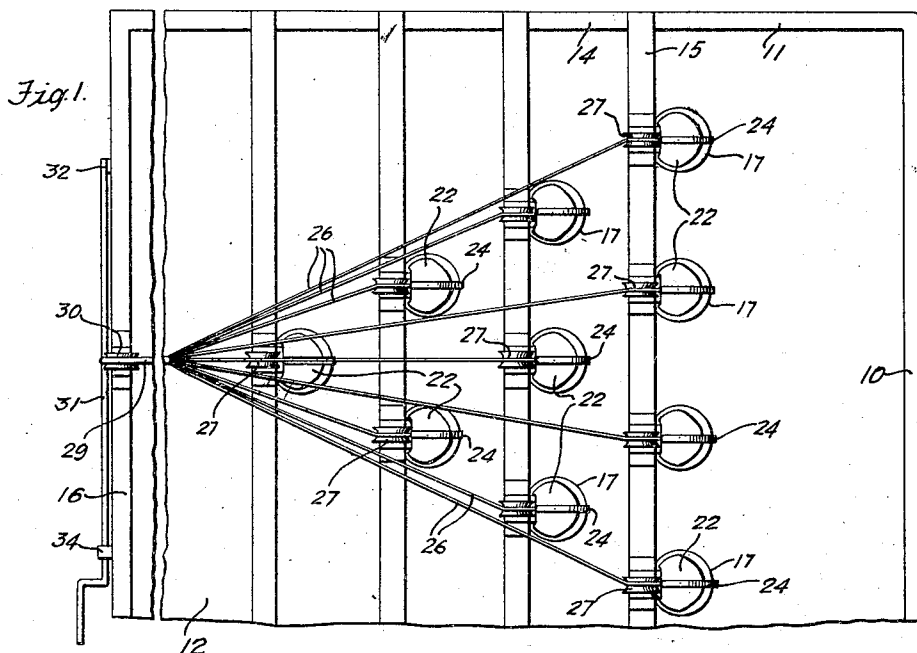
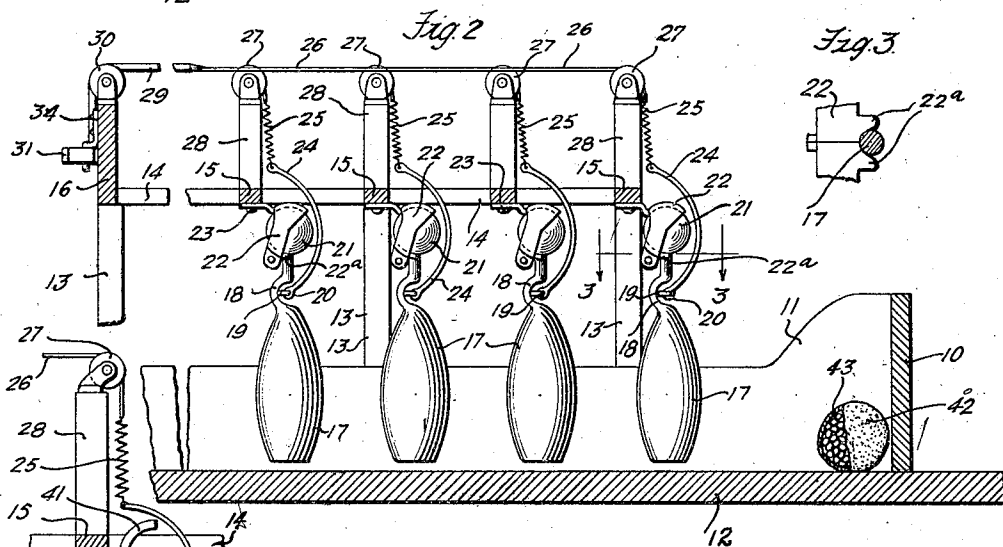
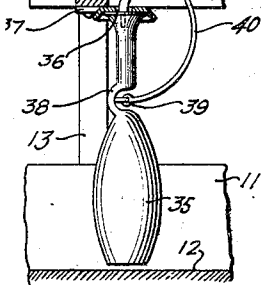
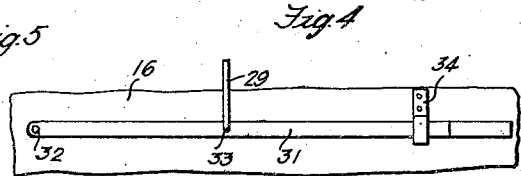
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BOWLING GAME APPARATUS

Filed Dec. 13, 1923



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BOWLING-GAME APPARATUS.

Application filed December 13, 1923. Serial No. 630,356.

This invention relates to game apparatus and with regard to its more specific features to apparatus for games of the nature of that ordinarily known as ten pins or bowling.

One of the objects of the invention is to provide apparatus of the above nature adapted to operate in an efficient and highly satisfactory manner. Another object is to provide such apparatus simple and inexpensive in construction. Another object is to provide an apparatus compactly disposed and conveniently operated wherein the characteristics and features of the game of bowling may be substantially realized. Another object is to provide a practical art relating to games of the above nature, which is simple and effective and conveniently adaptable to practical operation. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts and art, all as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which are shown one, or more, various possible embodiments of the several mechanical features of this invention,

Figure 1 is a plan view of the apparatus partly cut away.

Figure 2 is a side elevation certain parts being removed to better disclose the structure.

Figure 3 is a fragmentary section taken substantially along the line 3—3 of Figure 2.

Figure 4 is a detached elevation of certain parts shown in Figures 1 and 2; and

Figure 5 is a side elevation showing a modified form of parts shown in Figure 2.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now to the drawing in detail, there is shown an open ended frame comprising a back-stop 10 and side walls 11, only one of which is shown in Figure 1, the other thereof being similar in construction and similarly disposed opposite thereto. Within this frame are suspended pins as will be later described, adapted to form targets for a ball or the like delivered through the open forward end of the frame opposite the back-stop 10.

As shown in Figure 2, the frame is adapted to rest upon any suitable flooring such as shown at 12. The term pins as employed herein is to be interpreted to mean a member or device of the general nature of the pins employed in bowling alleys.

Extending upwardly from each of the side walls 11 are standards 13 shown as three in number. Across the upper ends of the standards 13 are secured longitudinally extending frame members 14, between which extend four cross members 15. Between the forward ends of the longitudinal members 14 extends a fifth cross member 16 having a greater vertical dimension than the members 15 for a purpose which will be hereinafter set forth.

From the lower surface of the cross members 15 are suspended the pins at such a height as to clear the floor 12 substantially as shown in Figure 2. These pins 17 are preferably ten in number and are positioned and spaced as shown in Figure 1 in triangular formation and in substantially the relative positions in which the pins of an ordinary bowling alley are set up. The pins may be of any desired size and together with the other parts of the apparatus are preferably so sized and relatively positioned as to reproduce in proportion the dimensions and spacing of the pins in the ordinary regulation bowling alley. These pins 17 may be formed of any desired material, but preferably and most conveniently they are made of sheet metal. Their lower portions have the shape of the ordinary bowling pin and between this part and the upper ends of the pins are provided crooked portions 18 within which are mounted, as upon brackets 19, pivot pins 20 thus positioned so as to fall substantially on the line of the axis of the pins. In the embodiment shown in Figure 2, each pin is provided at its upper end with a spherical head 21 about which is clamped a bracket 22 secured to a cross member 15 as at 23. This bracket 22 has a spherical inner surface within which the head 21 loosely rests and is preferably shaped substantially as shown in Figure 2 to encase slightly more than half the diameter of the head. In this manner the bracket 22 pivotally supports the pin 17, but permits it to swing upwardly in a rearward direction or at an angle to rearward direction. The normal path of the ball for which the pins 17 are the targets, will be considered as

being substantially in the direction at right angles to the backstop 10. It will thus be seen that the mounting or suspension of the pins above described permits them a free swinging action about their upper pivoted ends at an angle to either side of this normal direction of movement of the ball. Thus if the ball strikes a pin on the side, the pin is permitted to swing in the direction of the blow and in such swinging may strike other pins causing them to swing in the direction in which they are struck.

Connected to the pivot pin 20 of each pin 17 is a curved arm 24 arching upwardly and rearwardly around the head of the pin and connected at its upper end through a spring 25 to a cable 26, an individual cable and spring being provided for each pin. Each cable 26 passes over an individual pulley 27 mounted upon an upright 28 projecting from the cross member 15 below which the pin is suspended. The cables 26 extending forwardly are all joined to a common cable 29 which passes over a pulley 30 secured to the upper surface of the forward cross member 16. Upon the outer surface of part 16, as better shown in Figure 4, is a lever 31 pivoted as at 32 and to which the end of the cable 29 is connected as at 33. The lever 31 is capable of swinging upwardly and downwardly about its pivot 32 and is held in substantially horizontal position by a catch 34.

The respective pulleys 27 of each of the pins 17 are so positioned that a line through the pivot pin 20 and tangent to the surface of the pulley passes forwardly of the center of the head 21 of the pin when the pin is hanging in normal upright position. When the lever 31 is in engagement with the catch 34, tension is placed in the spring 25 through the cables 29 and 26. Now it will be seen that when the lower portions of a pin 17 is swung rearwardly or angularly as above described to a sufficient extent to move the line between the pivot 20 and the surface of the pulley 27 rearwardly of the center of the head 21, the spring 25, through the member 24, will quickly draw the pin 17 upwardly in the direction in which its lower portion is moved and out of operative position. As shown in Figure 3, brackets 22 are preferably provided with the lower diverging portions 22^a, partially embracing the neck of the pin 17 to reduce the tendency of the pin to swing sideways of its own accord and yet permit the pin substantially free swinging in the direction in which it is apt to be struck.

The pins having been drawn upwardly by the springs 25, as above described, the lever 31 is now released from its catch 34 and upon being swung upwardly releases the tension in the springs 25 and permits the pins to drop back to normal operative position. The lever 31 being swung upwardly again

and into engagement with the catch 34 tension is again placed in the springs 25 and the pins are all reset.

Referring now to Figure 5 of the drawing, there is shown another embodiment of the mounting of the pins. The pin 35 is provided with a flat top 36 which rests against the lower flat surface of a bracket 37 secured to the cross member 15. The pin 35 is provided with a crooked portion 38 as are the pins 17 and with a pivot member 39. Connected to the pivot 39 is a member 40 arching upwardly over the end of the pin and connected through a spring 25 to the cable 26. In this instance the pulley 27 mounted upon the upright 28 and over which the cable 26 passes is so positioned that a line tangent to the pulley surface and passing through the pivot 39 passes through the center of the flat top 36 of the pin. Thus when tension is placed in the spring 25, by means of the cable 26, the pin 35 is pulled vertically upward through the member 40 against the bracket 37. Upon the lower portion of the pin being swung in any direction so that the center of the surface 36 is out of line with the spring 25 and the pivot 39, the spring 25 quickly draws the pin 35 upwardly and out of operative position. A curved projection 41 is provided at the upper end of the pin passing through an enlarged opening in the bracket 37 to guide the pin in its swinging and keep the bracket 37 and the upper surface 36 of the pin in proper operative relation. The pin 35 having been drawn upwardly by the spring 25, the tension in the spring is now released as has been described and the pin drops back to vertical position being guided in such movement by the part 41. By again placing the spring 25 under tension by means of the lever 31, the pin is reset in normal operative position. It will be understood that by "normal operative position" of the pins as employed herein is meant an upright or erect position and that when the pins are "upset" they are removed from this position.

It will be seen that this latter suspension of the pins provides a substantially universal suspension therefor and permits them to swing in any direction in which they may be struck. Upon such swinging they are quickly drawn upwardly and out of operative position. If the ball strikes a pin, or if a pin is struck by another pin, in an angular direction, or even in a direction transversely to the normal path of the ball toward the pins, the pin struck will be drawn upwardly in that direction. In this manner the standard game of bowling wherein the pins are simply stood on end and are free to move in the direction in which they are struck, is substantially reproduced. Further the pins are reset with the greatest ease.

The above apparatus is adapted for use

under varying conditions, but may be employed particularly advantageously as an indoor game. It is desirable therefore that the ball employed be of such nature as not to harm or mar the floor or other woodwork in case it is accidentally thrown outside the confines of the side walls 11. The form of ball preferably employed is such as is shown in Figure 2 comprising an outer covering 42 of a suitable fabric such as heavy canvas, for example, and filled with a suitable material such as dried beans. Such a ball may be employed indoors without danger of harmful results. Furthermore this ball when projected along the floor or other surface has a motion which is ordinarily a combined sliding and rolling. This is particularly advantageous for indoor use. Many advantages are attained also by employing a ball of this nature which assumes a sliding motion only. The ball may be conveniently handled and curved as is the ordinary bowling ball and the suspension of the pins permitting them to swing in a plurality of directions renders possible the making of strikes and spares as in the ordinary game of bowling. As has been mentioned before the pins are preferably sized and spaced in substantial proportion to those of the ordinary bowling alley. The distance from which the balls are thrown may also be suitably proportioned in accordance therewith; for example, the length of the regulation bowling alley being sixty feet, if the pins are made one-half sized according to this invention the distance from which the balls are thrown may be thirty feet.

From the above it will be seen that there is herein provided an apparatus which embodies the features of this invention and attains the objects thereof and that the same is well adapted to the requirements of practical use.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiment above set forth, and as the art might be varied all without departing from the scope of the invention, it is to be understood that all matter hereinbefore set forth is to be interpreted as illustrative and not in a limiting sense.

I claim as my invention:—

1. In apparatus of the class described, in combination, a pin pivotally suspended adjacent its upper end, the lower portion thereof hanging freely, and means connected with an intermediate portion of said pin adapted upon movement of said lower portion to swing said pin upwardly about said pivoted upper end.

2. In apparatus of the class described, in combination, a pin pivoted at its upper end and hanging in normally upright operative position, and resilient means connected to said pin normally tending to hold it in operative position and adapted upon movement of the

lower portion thereof to swing said pin about its pivot upwardly out of operative position.

3. In apparatus of the class described, in combination, a pin having a pivoted mounting adjacent its upper end and positioned in normally upright operative position, and means connected to said pin below said pivot normally tending to hold said pin in operative position and adapted upon movement of the lower portion thereof to swing said pin about its pivot upwardly out of operative position.

4. In apparatus of the class described, in combination, a pin pivotally suspended adjacent its upper end, the lower portion thereof hanging freely, a member connected to said pin at an intermediate portion and arching upwardly over said pivoted end, and means connected to said member tending to draw said pin in an upward direction.

5. In apparatus of the class described, in combination, a pin pivoted adjacent its upper end and hanging in normally upright operative position, a member connected to said pin below said pivot and arching upwardly over the upper end of said pin, and a spring urging said member upwardly, said member being shaped and positioned to normally hold said pin in operative position and adapted upon movement of the lower portion of said pin to swing the same upwardly about its pivot and out of operative position.

6. In apparatus of the class described, in combination, a pin pivoted adjacent its upper end and hanging in normally upright operative position, a member connected to said pin below said pivot and extending upwardly over the upper end of said pin, a spring urging said member upwardly, said member being shaped and positioned to normally hold said pin in operative position and adapted upon movement of the lower portion thereof to swing the same upwardly about its pivot out of operative position, and means for releasing the tension in said spring.

7. In apparatus of the class described, in combination, a plurality of pins each pivoted adjacent its upper end and hanging in normally upright operative position, resilient means connected to each of said pins below the pivots thereof tending normally to hold them in operative position and adapted upon movement of the lower ends thereof to draw the same upwardly about their pivots out of operative position, and a device for releasing the tension jointly in each of said resilient means to permit said pins to swing back into operative position.

8. In apparatus of the class described, in combination, a pin universally pivoted adjacent its upper end and hanging in normally upright operative position, and means connected to said pin tending normally to hold it in operative position and adapted upon movement of the lower portion thereof to swing said pin about said pivot upwardly out of

operative position and hold it in the position into which it swings.

9. In apparatus of the class described, in combination, a plurality of spaced pins, means tending to swing said pins upwardly about axes adjacent their upper ends as they are struck and adapted to hold them in the position into which they have been swung, and means adapted simultaneously to render ineffective said first means and permit the pins to swing downwardly into upright position.

10. In apparatus of the class described, in combination, a pin, means mounting said pin with its lower end above the floor and permitting it to swing upwardly, means exerting a pull on said pin normally acting substantially through its support and acting upon the pin at a point beneath that about which it swings and exerting its pull substantially through said last point whereby said pull is normally effective to swing the pin, and means adapted to render said pulling means ineffective after said pin has been swung upwardly.

11. In apparatus of the class described, in combination, a pin, means mounting the pin in position to permit it to swing in any rearward direction, means normally exerting a pull upon said pin through the point about which it is adapted to swing and adapted to hold it in the position into which it has up-

wardly been swung, and means adapted to render said last-mentioned means ineffective.

12. In apparatus of the class described, in combination, a frame work adapted to rest removably upon the floor and comprising side walls and a backstop, supporting means extending upwardly from said frame work, and a plurality of pins suspended from said supporting means between said side walls and adapted to form a target for a ball, said pins being mounted to swing upwardly in any rearward direction.

13. In apparatus of the class described, in combination, a pin adapted to form a target, suspended from its upper portion, and adapted to swing upwardly and means adapted to prevent displacement of said upper portion as said pin swings.

14. In apparatus of the class described, in combination, a pin mounted for upward swinging out of operative position, supported adjacent its upper end and yielding means pulling said pin upwardly against said support, acting along a line adapted normally to restrain said pin from swinging.

In testimony whereof, I have signed my name to this specification this 12th day of December, 1923.

ROBERT S. BLAIR.