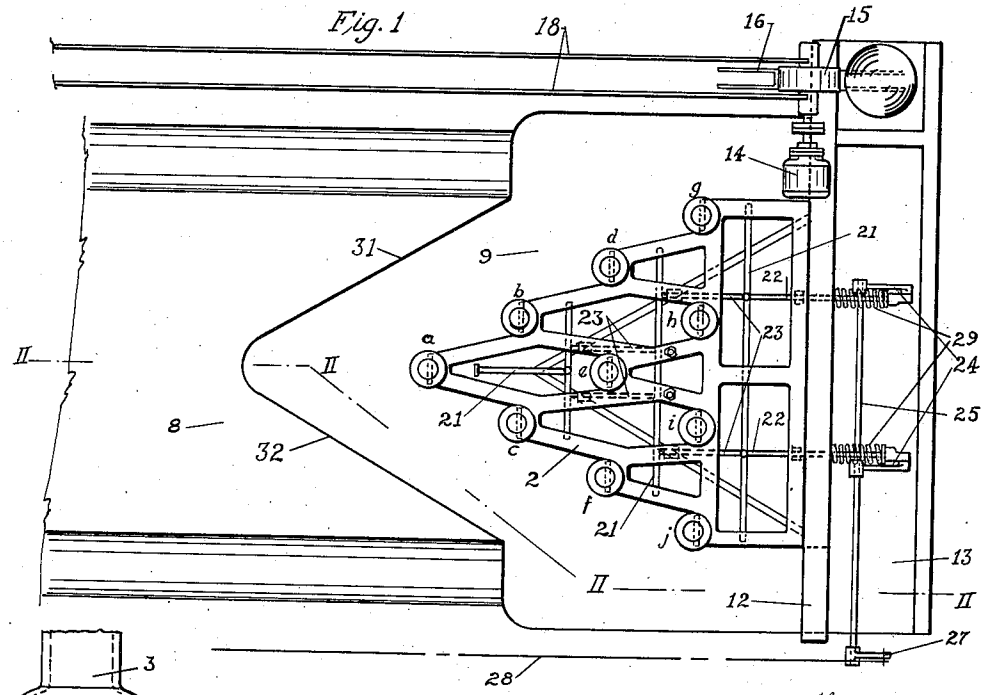
May 24, 1938. A. E. PAGE 2,118,383

BOWLING GAME

Filed March 9, 1936

Fig. 1



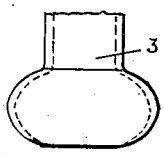


Fig. 4.

Fig. 2

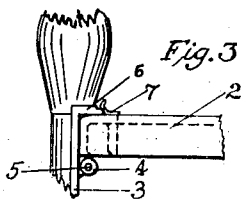


Fig. 3

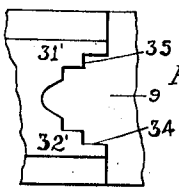


Fig. 5.

INVENTOR.
Alphonse E. Page
BY Thomas C. MacKay
ATTORNEY

Patented May 24, 1938

2,118,383

UNITED STATES PATENT OFFICE

2,118,383

BOWLING GAME

Alphonse E. Page, Niagara Falls, N. Y.

Application March 9, 1936, Serial No. 67,748

3 Claims. (Cl. 273—44)

This invention relates to a bowling game in which the player can cause the pins to be placed in the correct upright position by means operated from the head of the bowling alley. The principal object of the invention is to provide the player with a bowling alley equipped in such a manner that at the end of a series of throws he can set in motion apparatus which will reinstate the pins and return the balls without it being necessary for him to leave the head of the alley.

The bowling game to which my invention is applicable differs somewhat from the ordinary game of bowling. The same number of pins, however, is employed. The length of the alley is about the same as in the ordinary game, and the weights of the balls are about the same. A larger number of balls can be used to advantage in my modified game for reasons that will appear.

In the ordinary game of bowling the services of an attendant are usually employed to reinstate the pins and to return the balls that have been thrown. The operation of a bowling alley under these conditions is expensive. It is my purpose to modify the game and to equip the alley in such a manner that the expense of operation is greatly reduced, while the muscles of the player and their coordination with the sight are exercised in a marked degree.

My modified bowling game is illustrated by the accompanying drawing in which:

Figure 1 is a plan view showing the pins and their mounting together with certain features of the pit, the runway, and the adjacent portion of the alley;

Figure 2 is a sectional elevation on the line II of Fig. 1;

Figure 3 is a fragmentary side elevation, illustrating the mounting of a bowling pin in accordance with my invention;

Figure 4 is a fragmentary elevation showing a portion of the foot of a bowling pin as seen from the head of the alley; and

Figure 5 is a fragmentary plan view showing a modified construction for the foot of the alley.

Referring to the drawing in detail, ten pins, denoted respectively by the first ten letters of the alphabet, are mounted on a frame 2, each pin being rigidly attached to a dependent foot 3 that the player aims to strike with a ball when he tries to overthrow the pin to which the foot is attached. The foot 3 of each pin is attached to a bracket 4 that is pivoted on a rod 5 as shown in Fig. 3, the rod being rigidly attached to the frame 2. When a pin is in the upright position, a projection 6 from its supporting bracket 4 rests on the top of the frame 2 and is held there in the position shown in Fig. 3 by means of a spring clip 7 until the foot of the pin is struck by a ball thrown down the alley 8. When a pin is overthrown the force of the impact on the foot and subsequently the weight of the body of the pin swing it around the pivot 5 into an approximately horizontal position.

The frame 2 and the bowling pins that it carries are mounted over the pit 9 whose inclined surface 11 receives the balls after they have rolled along the alley toward the dependent feet of the bowling pins. When a ball is thrown by a player along the alley toward the pins it rolls over the edge of the alley adjacent to the pit and then moves through the space above the floor of the pit in a trajectory (which is a parabolic curve) until it strikes the foot of a pin or the floor of the pit. After a ball has struck the foot of one pin it may be deflected sufficiently to strike the foot of another pin before it reaches the floor of the pit. The floor of the pit is so inclined and shaped that each ball after landing on the floor 11 rolls on through a rear opening 12 into a storage pit 13 where the balls that have been thrown remain until they are required again for use at the head of the alley.

When it is desired to effect the return of the balls to the head of the alley for another series of throws, an electric motor 14 is started (for example by depositing a coin in a slot at the head of the alley) for the purpose of running the elevator 15 for a period of time which is limited by means of a time switch. The storage pit 13 is so inclined that the balls are moved by gravity in succession toward the running elevator 15 where the balls are caught successively by means of a series of forks 16 that are attached to an endless chain 17 that forms the carrying mechanism of the elevator. This endless chain is driven by the electric motor 14 with the aid of a pair of pulleys as indicated in Fig. 2 of the drawing. As each ball passes over the upper pulley it rolls off on to the runway 18 and then rolls down to the head of the alley within easy reach of the player.

The pins which have been overthrown with the use of a set of balls (for example a standard set of seven balls for this modified bowling game) are returned to an upright position by the operation of a frame 21 which is moved to the left (as seen in Fig. 1 and Fig. 2) by means of the push rods 22 which form (along with the connecting rods 23) a rigid framework which is slidably mounted under the frame 2. The framework has

a slot connection with each of two arms 24 which are rigidly attached to the shaft 25. The shaft 25 is rotatably mounted in bearings 26 and is provided near one end with an arm 27. The outer end of the arm 27 is connected to a cord 28 which can be pulled by the player at the head of the alley. By pulling this cord the shaft 27 is turned in a counterclockwise direction as seen in Fig. 2 and the framework under the member 2 is moved in a direction toward the alley and presses against the feet of the pins, which have been overthrown and restores them to an upright position. After the tension in cord 28 has ceased, the springs 29, which have been compressed as a result of the pulling of the cord, expand and return the shaft 27 and the connected framework to their original positions.

The end of the alley adjacent the pit is shown as cut away in a general V shape. If the player makes a straight throw for the pin *a* he may expect to see his ball roll over the apex of the V and strike the foot of the pin *a* and overthrow it. In order to put a premium on such straight throws I propose to link together the pins *a*, *e*, *h*, and *i*, as indicated at 33 in Fig. 2, so that impact of a ball against the foot of the foremost pin overthrows four pins. In order to overthrow the remaining pins the player must roll balls over the edges of the V indicated respectively as 31 and 32 in Fig. 1. The edge 31 is parallel to a line passing through the centers of the pins *a*, *b*, *d*, and *g* when these pins are all in an upright position. The edge 32 has a similar relationship to the pins *a*, *c*, *f*, and *j*. A ball that strikes the foot of the pin *b* may fall down to the floor of the pit without striking any other pins. A ball that strikes the foot of the pin *b* may, however, be deflected so that it subsequently strikes the foot of the pin *d*. In this case the player may therefore overthrow two pins with the same ball.

I propose to provide the player with seven balls, although he may not need this number to overthrow ten pins. In general the player will need a greater number of throws to overturn the ten pins than is permitted in a regular bowling game. My new bowling game presents a variety of possible situations arising from the order in which the pins are struck.

Instead of making the edges of the V straight as indicated in Fig. 1, they may be stepped as indicated at 31' and 32' in Fig. 5. The steps indicated in Fig. 5 are so arranged with respect to the pins that when the player for example sends a ball over the middle point of the short edge 35 the ball will strike the foot of the pin *d* if the latter is in an upright position. Considerable skill is necessary to avoid running the ball on to the side edges 34 which are parallel to the length of the alley and which tend to throw the ball off its course.

The balls are similar in form to those used in the ordinary bowling game. They can be made of wood or of a molded composition that can be hardened by heat.

My new bowling game can be managed by the players from the head of the alley without the necessity of frequent trips to set up the pins in place and to return the balls, and without the need for help from attendants who stay around the pit to perform such services for the players. The running expenses are consequently decreased in my bowling game. The installation for my bowling game can be set up at summer resorts, for example, where the expense of constructing and maintaining a bowling alley of the ordinary type would be prohibitive.

My new bowling game gives abundant opportunity for the exercise of strength and skill. While the apparatus indicated in the drawing and described in the specification is capable of a number of variations, the general character of the game and the apparatus used therein are defined in the following claims.

I claim:

1. A bowling game installation comprising an alley in which the main surface on which the balls are rolled is similar in form to that of a standard bowling alley but in which the foot of the alley terminates in a V-shaped edge over which the balls roll into the space overlying the floor of a terminal pit, a frame rigidly mounted above the floor of the pit and spaced from said V-shaped edge, a plurality of bowling pins supported on said frame and mounted for rotation from an initial vertical position to an approximately horizontal position as a result of impact from a ball, the portions of the pins above the level of the alley being similar in shape to those of standard bowling pins, a spring catch for holding lightly each pin when in a vertical position, and a foot on each of said pins which projects below the level of the alley in the initial position of the pin, the initial position of the foot intersecting the trajectory of a ball which is rolled toward the corresponding pin with any velocity greater than a predetermined minimum velocity.

2. A bowling game installation comprising a frame that carries a plurality of pins each of which is mounted for limited rotation about a horizontally disposed fixed axis in the frame, the upper part of the pin above said axis resembling a standard bowling pin and the lower part of the pin below said axis having an extensive surface concave toward the player, so that the impact and weight of a ball colliding with the lower part of the pin cause the upper part of the pin to be thrown downwardly in a horizontal position toward the player, a pit underneath the frame into which the lower parts of the pins project when the pins are upright, and a runway which is spaced from the frame so that a ball thrown down the runway by the player strikes the lower part of the pin within the volume of the pit.

3. The bowling game installation described in claim 2 in which two or more pins are interconnected by means of links pivotally connected to the pins in such a manner that the impact of a bowling ball against the foot of one of the connected pins overthrows all of said connected pins.

ALPHONSE E. PAGE.