

P. S. KNAPP.
BOWLING ALLEY.
APPLICATION FILED DEC. 12, 1912.

1,062,162.

Patented May 20, 1913.

2 SHEETS—SHEET 1.

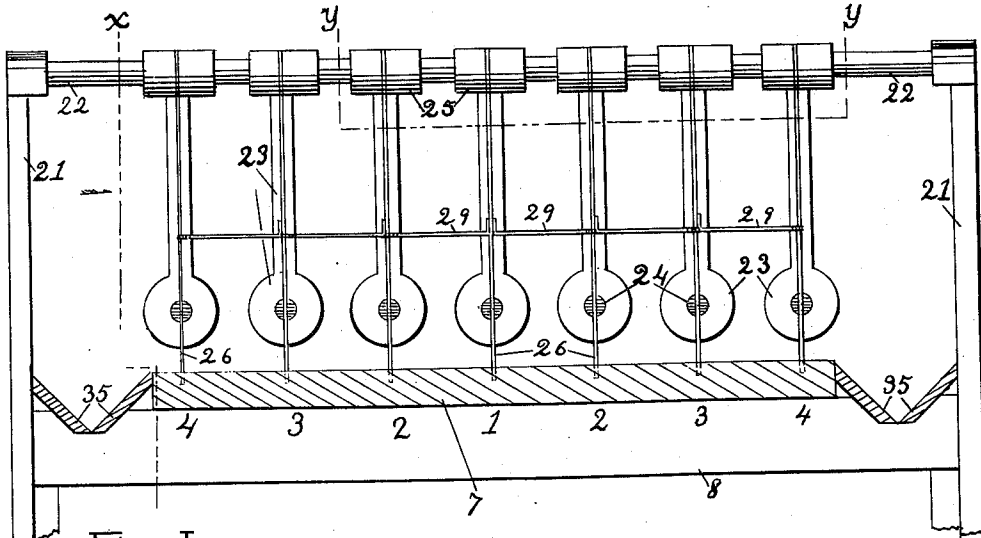


Fig. I.

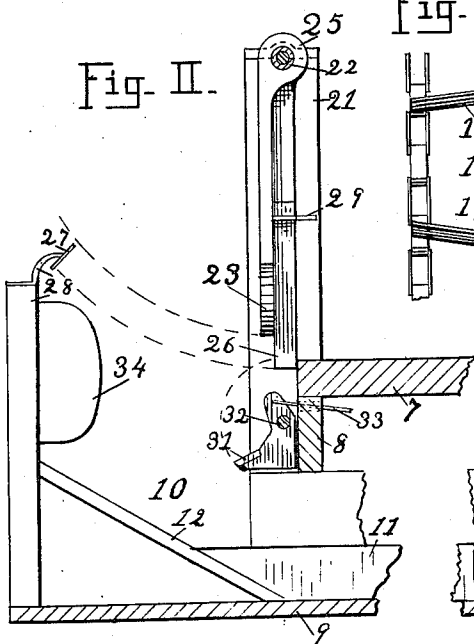


Fig. II.

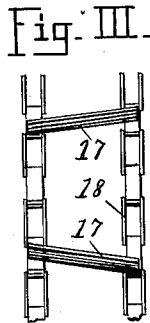


Fig. III.

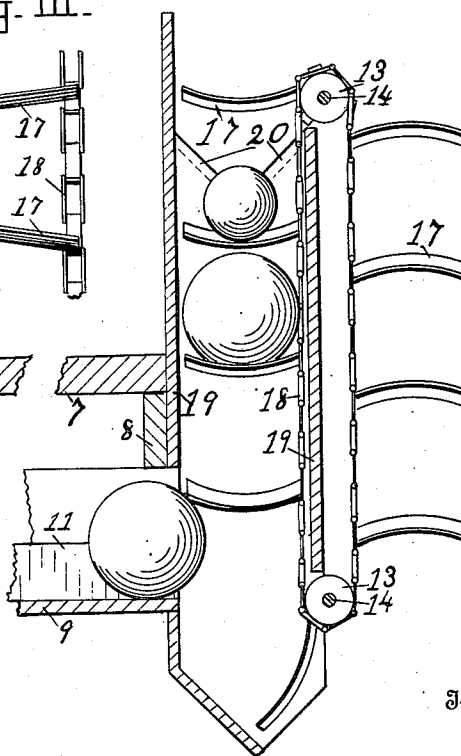


Fig. IV.

Witnesses

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2 SHEETS—SHEET 2.

1,062,162.

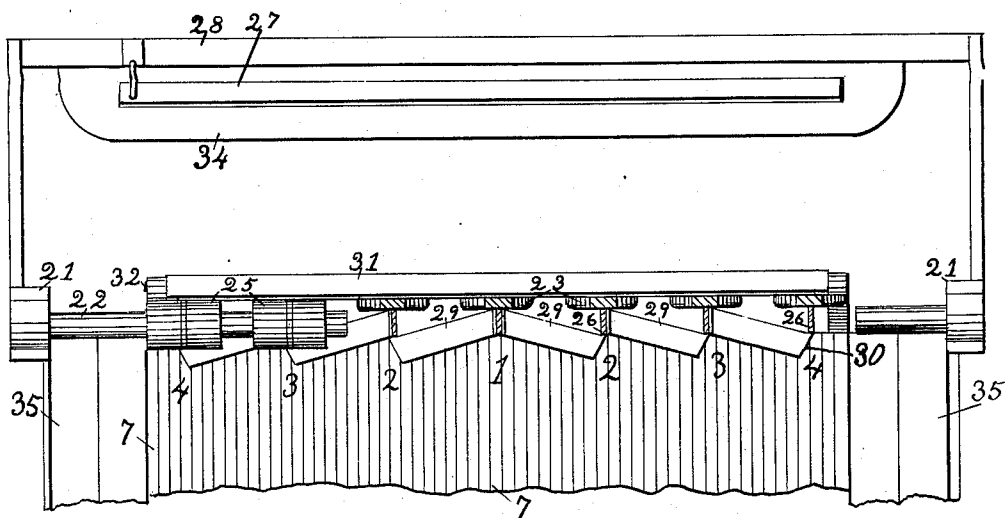
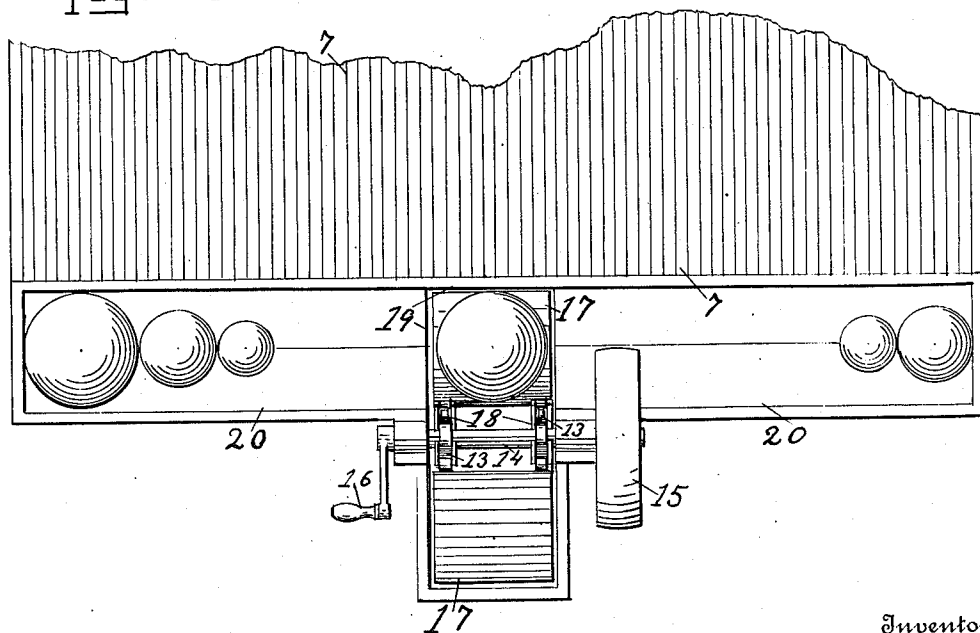


Fig. V.

Fig. VI.



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UNITED STATES PATENT OFFICE.

PAUL S. KNAPP, OF AKRON, OHIO.

BOWLING-ALLEY.

1,062,162.

Specification of Letters Patent.

Patented May 20, 1913.

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To all whom it may concern:

Be it known that I, PAUL S. KNAPP, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Bowling-Alleys, of which the following is a specification.

This invention relates, in general, to games of amusement and athletic exercise, and more particularly to bowling alleys. Its object is to provide a substitute for the common tenpins, having some like characteristics, but obviating the necessity of an attendant to set up pins and return balls, and offering means for playing a variety of games with the bowling balls.

To this end, my invention consists in the construction and combination of parts forming a bowling alley hereinafter more fully described and particularly stated in the claims, reference being had to the accompanying drawings, in which:

Figure I represents, partly in transverse vertical section, the foot of the bowling alley and showing in front view the hanging targets, according to my invention. Fig. II shows a longitudinal vertical section at line *x* of Fig. I. Fig. III is a face view of a portion of the elevator chains, showing the opposite slant of different scoops. Fig. IV is a side view, partly in vertical section, of the ball elevator. Fig. V is a plan view, partly in horizontal section along the irregular line *y* of Fig. I, of the foot end of my bowling alley. Fig. VI is a plan view at the head end of the alley, showing the ball elevator and accessories.

Numeral 7 represents the bowling bed of the alley, constructed in any usual manner, on supporting joist 8. Under these I locate a passage having a floor 9, which slants from the pit 10 at the foot of the alley to the head end of the alley, and converging sides 11. The bottom 12 of the pit slants steeply forward to the floor 9. Sprocket wheels 13 are mounted on shafts 14, one of which is provided with a belt pulley 15 and a crank 16. The shafts are journaled in stationary bearings. Scoops 17, preferably trough-shaped, are mounted on chains 18 that are carried by the sprocket wheels 13 to travel up in the chute 19, forming an elevator that returns down at the opposite side. The passage 9—11 leads into the chute 19, and troughs 20 are located at the

sides of the chute near its top. In any suitable supports, such as the posts 21, I secure a shaft 22 and on it suspend a series of targets 23 to swing freely in line of the alley. On the face of each target may be painted, or otherwise shown, a bull's-eye 24. Each target has a broad hub 25 which is centrally slotted across the line of the shaft to receive a thin tongue 26 which hangs vertically in front of the target and bull's-eye, with its lower end against the rear end of the bed 7. A thin bar 27 extends across the width of the bed in the path of the tongues when swung back, and is attached to some fixed support 28. This bar is of suitable material to ring as a bell when struck by any one of the tongues 26, but the targets 23 are short enough to swing back past the bell without hitting it. The central tongue 26, position 1, is provided with two lateral wings 29 which extend in front of the adjacent tongues 2. These tongues 2 have each one tongue extending in front of the next tongue 3, away from the central one, and so on to the outside tongues 4, which have no wings. A returning catch 31 is hung on a pivot 32 and is provided with a string 33 which extends forward to some place convenient to the operator. A buffer 34 stops the balls, and, falling upon the steeply inclined floor 12 of the pit, they are sent forward with a considerable velocity into the passage 9—11 and roll quickly to the chute 19, where the chains 18 and scoops 17 raise them to the level of the troughs 20. The scoops 17 are alternately mounted on the chains 18, slanting one to the right and the next to the left so as to deliver balls in both troughs 20. The elevator may be operated with a belt on its wheel 15 by any suitable power, or it may be turned by the hand crank 16.

In operation, if a ball rolled along the bed strikes centrally any one of the tongues, that tongue will be driven to swing back and strike the bell 27. If a ball passes between the tongues and hits one or more targets they will be swung back, but will not ring the bell. If a ball strikes so far to one side of its center on a tongue as to glance off it will swing that tongue sidewise and not carry it back far enough to ring the bell. It is possible that a glancing hit on the side of a tongue may disengage its wing from the next tongue. In that event gravity will not

restore the tongues to their normal positions, but a pull upon the string 33 will raise the returning catch 31 and crowd them home, each wing 29 having an inclined or wedging end 30 for that purpose. The side troughs 35 are to carry stray balls to the pit 10. If the central tongue, position 1, be fairly hit it will carry with it the twos and they will carry the threes and they the fours, making a general crash of sounds on the bell. It is not practicable to prevent the tongue bodies from twisting a little when the side arm resists the sudden thrust of a ball, and that causes a very agreeable rotation in the bell strokes whereby they can usually be counted. Of course, there might be a differently sounding bell for each tongue to hit in the place of the one long bell bar 27. The natural object would be to hit fairly the central tongue and make them all ring, but the variety of effects that may be produced by different hits suggests that rules may be agreed upon to play many different games on this bowling alley, and great skill would be required to hit any stated tongue so squarely as to make it ring.

Part of the advantages of this invention would be secured by the hanging targets and tongues without the aid of the lateral wings on the tongues, but I prefer to apply them as giving greater variety of results in bowling.

I claim:

1. In a bowling alley, a bowling bed; a series of targets suspended over the foot of the bed; a tongue suspended to hang in front of each target; a bell located in the path of the tongue, and wings projecting laterally from the tongues to engage adjacent tongues.

2. In a bowling alley, a bowling bed; a series of targets suspended over the foot of the bed; a tongue suspended in front of each target; a bell located in the path of the tongue; wings projecting laterally from the tongues and having slanting ends for engagement with adjacent tongues in their return movement.

3. In a bowling alley, a bowling bed; a series of targets suspended over the bed; a tongue suspended in front of each target and narrower than the target, and a bell fixed in the path of the tongue.

4. In a bowling alley, a bowling bed; targets suspended over the bed, and a tongue narrower than each target hung in front thereof, substantially as shown and described.

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

PAUL S. KNAPP.

Witnesses:

ERVIN D. FRITCH,
H. N. SHIVELY.