

UNITED STATES PATENT OFFICE.

EDMOND VERSTRAETE, OF CHICAGO, ILLINOIS.

BOWLING-ALLEY.

SPECIFICATION forming part of Letters Patent No. 655,034, dated July 31, 1900.

Application filed April 2, 1900. Serial No. 11,188. (No model.)

To all whom it may concern:

Be it known that I, EDMOND VERSTRAETE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bowling-Alleys; of which the following is a specification.

My invention relates to bowling-alleys, and it particularly relates to bowling-alley runways; and it consists in the various features of construction and combination hereinafter to be more fully described, and pointed out in the claims hereto annexed.

Referring to the accompanying drawings, wherein like reference-letters indicate the same or corresponding parts, Figure 1 is a plan view of a section of a bowling-alley and bowling-ball runway, which latter is equipped with my novel device. Fig. 2 is a side elevation of a portion of the parts shown in Fig. 1, the part *b* of said last-mentioned figure being omitted. Fig. 3 is an enlarged plan view of a portion of the parts shown in Figs. 1 and 2. Fig. 4 is a vertical section taken on the line 4-4 of Fig. 3 and viewed in the direction indicated by the arrows at the top and bottom of said figure. Fig. 5 is a sectional view of my novel device, showing one manner in which the separator may be retained in such normal position that one of the arms thereof will be perpendicular, the advantages of which will hereinafter be more fully explained. Fig. 6 is a plan view of a portion of the parts shown in Figs. 1 and 3 and illustrates one of the many obvious modifications in the form of my novel separator that may be employed.

I am not aware that any device has been devised, patented, or put into practice for automatically or otherwise keeping bowling-balls separated from one another at the player's end of the bowling-ball runway, whether said balls be of the same or of different sizes; but I am informed and believe that various devices differing essentially from mine have been employed for the purpose of diminishing the velocity of the bowling-balls at the end of the runway.

All the devices of the existence of which I am informed heretofore employed for the purpose of diminishing the velocity of bowling-balls before said balls arrive at or approximate to the terminus of the runway are defective for

the following reasons: They are extremely noisy in their action, and consequently irritate the player and distract his attention from the game, and, again, such devices by coming in contact with the ball but momentarily retard its progress, which ball when relieved from said retarding action regains to a more or less extent its momentum, dependent upon the distance it has to travel, and thus if another ball lies between the retarding devices referred to and the end of the runway a released ball comes into more or less violent contact therewith, thereby creating an additional noise, occasioned by impact of the two balls, which also tends to wear the surface of both, and, further, none of the known devices referred to keep the balls separated one from another when said balls are at rest at the terminus of the runway, which, being a fact, renders it extremely liable for the player when withdrawing a ball from the balls at rest at the end of the runway to have his fingers crushed should another ball come in contact with the foremost of said balls.

The objections to the original forms of bowling-ball runways, in connection with which no devices are employed, either to retard the speed of the balls cast into the runway by the attendants delivering the same or to separate said balls from one another at the player's end of the runway, are the noise created by balls coming in contact with one another and the terminal post at the end of the runway and the wear and tear of the balls occasioned by their coming into such contact, while the chief objection is the liability of the player meeting with an accidental injury to his hands while endeavoring to extract a desired ball from a number of balls at rest on said runway. Numerous other objections may be made to all of the known forms of bowling-ball runways and ball-retarding attachments therefor which are deemed by me so obvious as to render it unnecessary to set them forth in detail.

The object of my invention is to supply a simple, efficient, and comparatively cheap means of overcoming all of the objectionable features of the devices for breaking the speed of bowling-alley balls on the runway, which means when said balls are at rest thereon will separate them one from another, and

otherwise improve upon the bowling-ball runway devices now known to the art.

Referring to the drawings, A shows bowling-balls, and B a bowling-ball runway composed of the parts *b b'*. C, C', C², C³, C⁴, C⁵, C⁶, C⁷, and C⁸ are my novel ball-separators, hereinafter to be more fully described; D, a terminal post; *d*, a cushion or pad; E, a spring, and *e* a nut upon or squared member attached to or forming a part of the hub of the separator. (Shown in dotted lines in Fig. 5.) In the form of separator, as the separator C, shown in the drawings, *c* shows arms or spokes attached to or forming a part of the hub *c*³. *c'* is an axle or suitable pivot; *c*², rubber or other suitable fenders or buffers, and *e* (shown in dotted lines in Fig. 5) a squared nut or member attached to or a part of the hub *c*³ and against which the spring E rests.

Reference being had to the parts mentioned, and particularly to Figs. 2 and 5 of the drawings, the operation of this form of my device is as follows: When a ball A is precipitated down the runway, upon approaching the player's end thereof it comes in contact with the outermost separator C, striking whichever arm or spoke *c* thereof that projects upwardly in its path, thereby forcing its extremity forward and downward, thus causing the separator to turn upon its axis *c'*, which movement elevates another arm into such position as to be similarly acted upon by the ball next following, unless said action is prevented in the manner hereinafter pointed out. Having pressed the upwardly-projecting arm of the first separator downward and out of its path, the ball next comes in contact with the elevated arm of the second separator—as, for instance, the separator C'—which is similarly acted upon. Thereafter it strikes the next elevated arm of the next succeeding separator, and so so until it is finally brought to rest either by the post D or a cushion or pad *d*, secured thereto, or by coming in contact with an arm, which rests against or which it drives against a preceding ball.

The upwardly-projecting arm of the separator will of course be permitted a greater length of movement where the ball against which it finally rests is of less diameter than were said ball of a diameter equal or more nearly equal to the distance separating two adjacent upwardly-projecting arms, so, as shown in Fig. 2, the upwardly-projecting arms, when finally stopped by contact with the balls, assume angles of degrees varying according to the diameters of the balls employed.

In order to assure a normal perpendicularity of the upwardly-projecting arm (which ever arm it may be) of the separator, I prefer to employ a flat or leaf spring in combination with a nut or a squared member attached to or forming a part of the separator-hub, (where the hub is provided with four arms,) which spring will be forced out of its normal position when the separator and the

squared part referred to are revolved by means of a ball or other moving agent, but which will thereafter by bearing against one of the faces of the squared member cause the separator to assume its normal position.

Referring to Fig. 2, it will be seen that I have illustrated a second series of balls A, which are controlled by a separate series of separators, only the ends of the axle *c'* of which are shown.

Though the spring E or any similarly-acting spring or equivalent thereof is not an essential feature of my invention, it nevertheless forms an important part thereof and accomplishes certain valuable results. Thus where a number of separators are employed, as shown in Fig. 2, before a ball can come in contact with the terminal post D or pad *d* it will be obliged to overcome the resistance offered by the springs controlling the separators, the separators thus acting, in addition to their character as separators, as speed-diminishers, the degree to which they diminish the speed of the balls being dependent upon the number of separators and the strength of the springs employed. If desired, the spring of the first separator or the springs of several of the outer separators combined may offer a resistance to the speed of the ball sufficient to bring the ball to a stop before it reaches the end of the runway. If such be the case, before that ball can proceed on its way, if not manually forced ahead, it must be given a fresh impetus by another ball.

It is obvious that the separator of my invention may have any suitable number of arms and that the hub may be provided with a corresponding number of flat faces where a spring is employed to retain an arm of the separator in normal perpendicularity; that instead of flat faces upon or attached to the hub suitable indentations may be provided, within which the spring or a raised part thereof will fit or that the indentations may be in the spring and the hub or part attached thereto be provided with suitable protuberances to engage said indentations; that a spring of any suitable form may or may not be employed to perform the functions of the spring E, and when employed it may be secured in any suitable manner and at any desired point; that the separator may be provided with ball, roller, or any suitable bearings and turn independently of the axle or that the axle when the separator is rigidly secured to it may be provided with any suitable bearings; that the buffers or pads *c*² may be of any suitable size, form, and material; that the runway may be of any suitable form and construction and have any desired pitch; that while I have shown the separators as situated in the center of the runway they may be situated at any desired point—as, for instance, they may be located above the runway and come in contact with the upper part of the balls instead of the lower, as shown in the drawings, or otherwise suitably disposed;

that any suitable number of separators may be employed and that said separators where a number of them are used need not have the same number of arms and that their positions in relation to the balls may vary; that where a number of separators are used some of them may be provided with a suitable spring, as the spring E, and the others not, and that the strength of the springs when the same are employed may vary.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bowling-alley, a bowling-ball runway in combination with ball-actuated means for preventing the balls from coming in contact with each other at the player's end of said runway, substantially as described.

2. In a bowling-alley, the combination of a bowling-ball runway, ball-actuated means for preventing the balls from coming in contact with each other at the player's end of said runway, and means for retarding the rotation of the ball-separating means, thereby diminishing the speed of the balls, substantially as described.

3. In a bowling-alley, a bowling-ball runway, in combination with ball-actuated means provided with two or more arms for preventing the balls from coming in contact with

each other at the player's end of said runway, substantially as described.

4. In a bowling-alley, the combination of a bowling-ball runway, ball-actuated means provided with two or more arms for preventing the balls from coming in contact with each other at the player's end of said runway, and means for causing any one of said arms to assume a substantially-perpendicular position, substantially as described.

5. In a bowling-alley, the combination of a revoluble member provided with two or more arms, and a bowling-ball runway, the parts named being so combined that one of the arms referred to will prevent a ball coming from behind it from coming in contact with a ball in front of it, substantially as and for the purpose described.

6. In a bowling-alley, the combination of a ball-actuated revoluble member, provided with two or more arms, and a bowling-ball runway, the parts named being so combined that one of the arms of said revoluble member will lie in the path of a ball moving along said runway, substantially as, and for the purpose, described.

EDMOND VERSTRAETE.

Witnesses:

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