

UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

BOWLING-ALLEY.

SPECIFICATION forming part of Letters Patent No. 469,071, dated February 16, 1892.

Application filed May 2, 1891. Serial No. 391,386. (No model.)

To all whom it may concern:

Be it known that I, ALBIN WARTH, a citizen of the United States, residing at Stapleton, in the county of Richmond and State of New York, have invented new and useful Improvements in Bowling-Alleys, of which the following is a specification.

This invention relates to bowling-alleys, and has for its object to provide novel means for setting the pins without the necessity of employing a movable setting-frame above the pin-platform, as heretofore, which is objectionable in that a level surface cannot be maintained owing to the possibility of dirt and other matter accumulating or gaining access to the space beneath the setting-frame.

The invention also has for its object to provide a novel bowling-alley whereby worn places can be readily renewed.

To accomplish all these objects, my invention involves the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 represents a side elevation when the apparatus is in position for the pins to be set up. Fig. 2 is a plan or top view. Fig. 3 is a longitudinal vertical section in the plane *xx*, Fig. 2. Fig. 4 is an inverted plan. Figs. 5, 6, 7, and 8 are side elevations of the different kinds of slats which are used in the construction of the bed of the alley. Fig. 9 is a transverse vertical section in the plane *yy*, Fig. 2, on a larger scale than the previous figures. Fig. 10 is a vertical section of the pin-platform in the plane *zz*, Fig. 4, on the same scale as Fig. 9. Fig. 11 is a transverse section of the pin-platform in the plane *uu*, Fig. 4, on the same scale as Fig. 9. Fig. 12 is a partial section of the pin-platform, showing one of the pins in engagement with its setting-guide. Fig. 13 is a similar view showing a modified form of a setting-guide. Fig. 14 is a similar view showing the setting-guide in its inactive position.

The bowling-alley consists of the platform A, on which the pins P are placed, and of the bed B. Beneath the platform A is a frame C, which carries the setting-guides *a* for the

pins P. These setting-guides are made either in the form of plain studs and engage cavities *a*^o in the bodies of the pins P, as shown in Fig. 12, or each of said setting-guides may consist of three or more studs and engage the bodies of the pins at their circumference, as shown in Fig. 13. The setting-guides *a* extend into holes *b* in the platform A, and suitable means are provided for raising and lowering the same. In the example shown in the drawings the setting-guides are secured in the frame C, and if this frame is raised the setting-guides extend up through the platform A, Figs. 11, 12, and 13, so that one of the pins P can be brought into engagement with each of the setting-guides, and after all the pins have been placed in position the frame C is lowered, leaving each pin in its correct position and entirely detached from the setting-guides. In the example shown in the drawings the frame C is raised and lowered by means of a lever D, which is mounted on a shaft *c*. This shaft has its bearings in the sides of the base E, which supports the platform A and the bed B, and on said shaft are firmly mounted two forked levers *d d*, Figs. 3, 4, and 10, which engage the rear portion of the frame C. On the shaft *c* is also mounted a forked lever *e*, engaging a lever *f*, mounted on a shaft *g*, which has its bearings in the base E and runs parallel with the shaft *c*. On the shaft *g* is firmly mounted a forked lever *h*, Figs. 3, 4, and 10, which engages the front portion of the frame C, so that when the lever D is moved in the direction of the arrow marked near it in Fig. 1 the frame C is depressed, as shown in Fig. 14 and in dotted lines in Fig. 11, and when the lever D is moved to the position shown in Fig. 1 the frame C is raised and the setting-guides *a* are brought into their active positions.

On one end of the shaft *g* is mounted a lever *i*, which connects by a rod *j* with one arm of a bell-crank lever *k*, the other arm of which connects by a link *l*, Figs. 1 and 11, with the arm *m* of a bell-crank lever *m n*, that has its fulcrum in a bracket *o*, secured to the outside of the base E. The arm *n* of the bell-crank lever *m n* is provided with a socket to receive the flag-staff F. When the lever D occupies

the position shown in the drawings, the flag-staff F occupies an inclined position, Figs. 2 and 11, and the flag is secured to said staff, forming a visible signal giving notice to the players not to throw a ball. I have also provided an audible signal, and in the example represented by the drawings this signal consists of two bells H G and a clapper, which is secured to a lever J, (best seen in Fig. 11,) mounted on the end of the shaft c opposite to that on which the lever D is secured. The bells G H are supported by a bracket L, and whenever the lever D is moved to the position shown in Fig. 1 the clapper strikes the small bell H, calling the attention of the pin-boy to the fact that the pins must be set up, and at the same time the visible signal is brought into its throwing position of "danger," prohibiting the players from throwing a ball. After the pins have been properly set up the lever D is moved in the direction of the arrow marked near it in Fig. 1, the setting devices are caused to release the pins, the visible signal is thrown in its position of "safety," and the clapper I strikes the large bell G, calling the attention of the players to the fact that everything is ready. From this description it will be seen that the setting-guides a compel the pin-boy to place the pins in their correct positions upon the platform A, and after the pins have been set up they are released from the setting-guides, so that they are perfectly free to fall and to roll precisely in the same manner as the pins on every bowling-alley of the ordinary construction.

The bed B of my bowling-alley is made in two or more sections, and each of these sections is formed of a series of slats s s' s² s³, (see Figs. 5, 6, 7, and 8,) which are placed edge-wise, Fig. 9, and clamped together by screw-rods p. The base E consists of longitudinal beams q and transverse beams r, and upon the longitudinal beams q are firmly secured metallic traverses M, in which are secured hooks t, which engage the clamping-rods p, Figs. 3, 9, and 10, and are provided with screw-threads and nuts, so that by screwing up these nuts the bed B can be clamped down firmly upon the traverses M. By referring to Figs. 6, 8, and 10 it will be seen that those portions of the slats s' and s³ which come opposite to the hooks t are provided with suitable mortises to make room for the hooks. Moreover, the slats s² s³ are provided with rectangular slots s^o and straight slots s*, so that when the nuts of the clamping-rods p are released those slats which have worn out can be readily removed and replaced by fresh ones without taking up the entire bed. At the point N of the bed where the sections meet, Fig. 2, the adjoining slats break joints, and upon the traverses M, which support the ends of the adjoining sections of the bed, are secured lugs a', through which extend tie-rods b', provided with nuts, so that by screwing up these

nuts the ends of the sections are drawn close together. From this description it will be understood that the bed of a bowling-alley constructed according to my invention can be kept in proper working order with comparatively little expense or loss of time.

It has been proposed to construct a bowling-alley with a platform having attached plates which register with orifices in a vertically-movable frame, so that when the latter is raised the orifices form guides for setting the pins upon the raised plates of the platform, and when said frame is lowered the orifices embrace the plates on which the pins have been set. Such construction is objectionable, if not impracticable, in that the least accumulation of dirt or other matter beneath the vertically-movable frame prevents it from sinking sufficiently to produce a level surface, and therefore the pins would stand in shallow cavities. This objection is entirely avoided by my invention, and I am enabled to preserve a level surface at the pin-platform.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a pin-platform having orifices with pin-setting guides movable vertically in the orifices of the pin-platform, substantially as described.

2. The combination of a pin-platform having orifices with the pins having guide-receiving cavities in their bases, pin-setting guides movable vertically in the orifices of the pin-platform, and means for simultaneously raising and lowering the guides in the orifices, substantially as described.

3. In a bowling-alley, the combination, with the pin-platform A, having the orifices b, of a frame C, situated beneath said platform, setting-guides a, carried by said frame and movable vertically in the orifices of the pin-platform, and a lever for imparting to said frame a rising and falling motion, substantially as described.

4. In a bowling-alley, the combination, with the pin-platform A, of a frame C, situated beneath said platform, setting-guides a, carried by said frame, two rock-shafts c g, geared with each other and with the frame C, and a lever for imparting motion to the said rock-shafts, substantially as described.

5. In a bowling-alley, the combination, with the pin-platform A, of a frame C, situated beneath said platform, setting-guides a, carried by said frame, a visible signal, and a lever for imparting motion to the frame C and to the signal, substantially as described.

6. In a bowling-alley, the combination, with the pin-platform A, of a frame C, situated beneath said platform, setting-guides a, carried by said frame, an audible signal, and a lever for imparting motion to the frame and to the signal, substantially as described.

7. In a bowling-alley, the combination, with

the sectional bed B, of traverses M, and tie-rods b' , carried by said traverses, substantially as described.

5 8. In a bowling-alley, the combination, with the slats s s' s^2 s^3 , composing the bed B, of clamping-rods p , traverses M, and hooks t , substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALBIN WARTH.

Witnesses:

W. C. HAUFF,

E. F. KASTENHUBER.