

A. WARTH.
BOWLING ALLEY.

No. 470,023.

Patented Mar. 1, 1892.

Fig. 1.

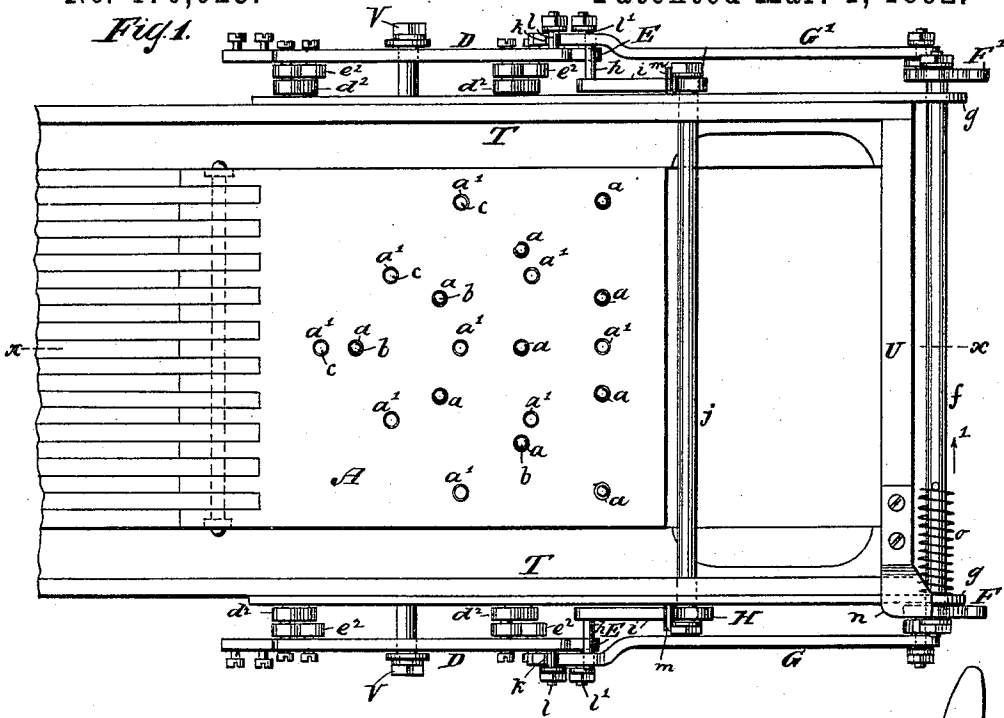


Fig. 2.

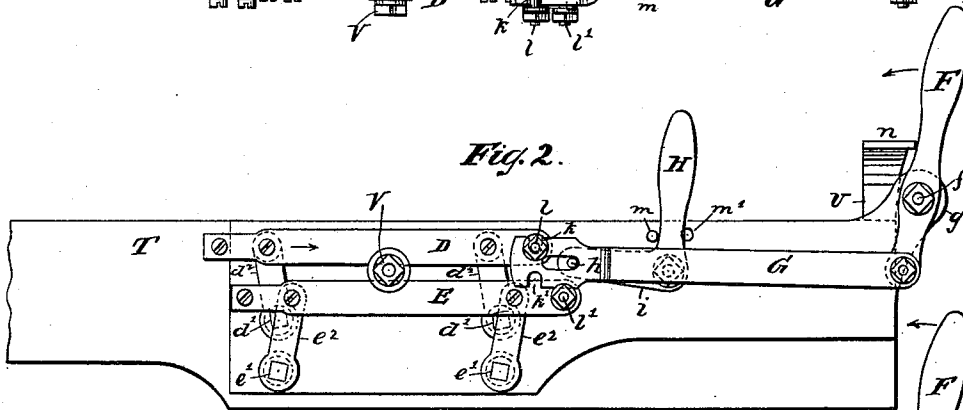
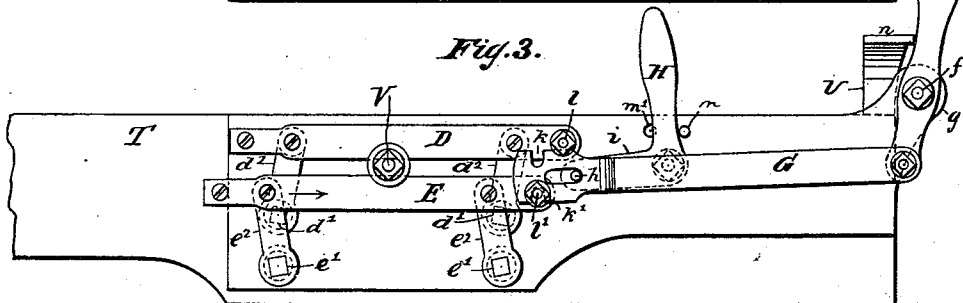


Fig. 3.



WITNESSES:

Edward Wolff.
William Miller

INVENTOR:

Albin Warth.

BY

Van Santvoord & Hauff
his ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

A. WARTH.
BOWLING ALLEY.

No. 470,023.

Patented Mar. 1, 1892.

Fig. 4.

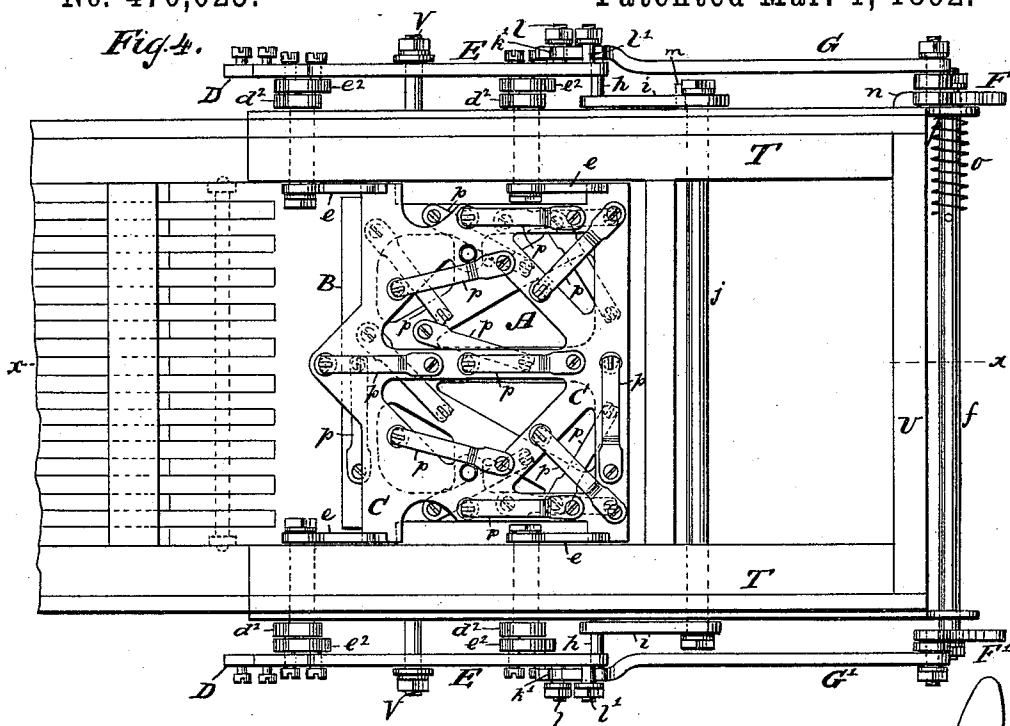


Fig. 5.

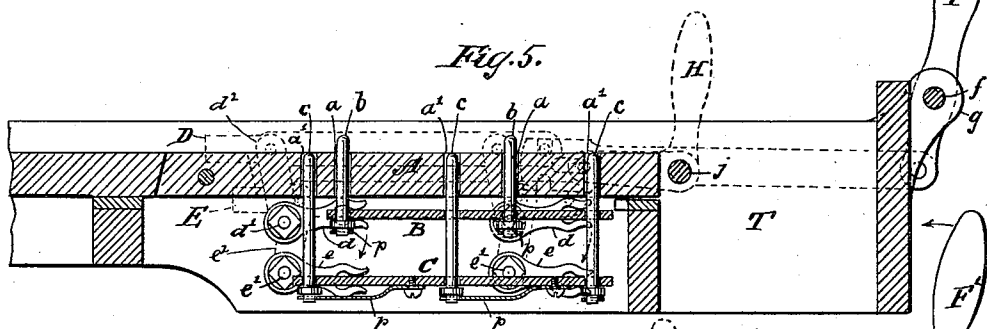
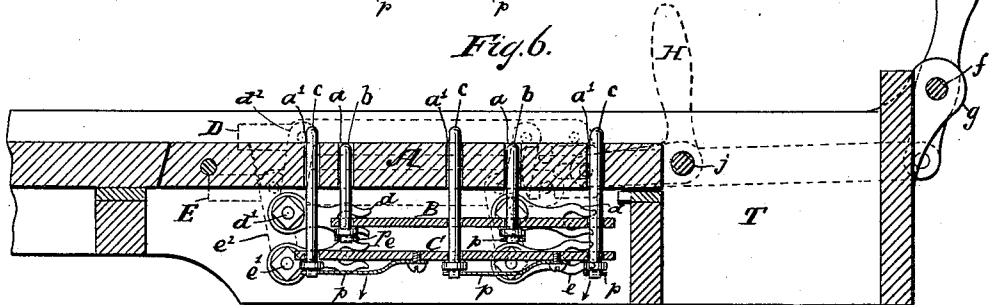


Fig. 6.



WITNESSES:

Edward Wolff.
William Miller

INVENTOR:

Albin Warth.

BY

Vandeventer & Haupp
his ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

BOWLING-ALLEY.

SPECIFICATION forming part of Letters Patent No. 470,023, dated March 1, 1892.

Application filed September 10, 1891. Serial No. 405,294. (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 certain improvements in bowling-alleys which are provided with movable setting-guides, said improvements being pointed out in the following specification and claims and illustrated in the accompanying drawings, in which—

Figure 1 is a plan or top view of that part of a bowling-alley on which the pins are set up and which I term the "pin-platform." Fig. 2 is a side elevation when the setting-guides are adjusted for ten-pins. Fig. 3 is a similar elevation when the setting-guides are adjusted for nine-pins. Fig. 4 is an inverted plan. Fig. 5 is a longitudinal vertical section in the plane xx , Figs. 1 and 2, when the ten-pin setting-guides are in their active position. Fig. 6 is a similar section in the same plane when the nine-pin setting-guides are in their active position.

In the drawings, the letter A designates the pin-platform, which is perforated with two sets of holes $aaa a'a'$, and beneath which are situated two carriers or frames B and C, one of which carries the setting-guides bbb , which engage the holes aaa , while the other carries the setting-guides ccc , which engage the holes $a'a'$. In the example shown in the drawings the numbers and positions of the holes aaa and setting-guides bbb are adjusted for ten-pins and the numbers and positions of the holes $a'a'$ and setting-guides ccc are adjusted for nine-pins; but it is obvious that the numbers of the holes and of the setting-guides can be adjusted to different numbers of pins if it ever should be desirable to do so. The frame C is located beneath the frame B.

The frames B C are controlled each by four levers $ddee$, respectively, the levers dd , which carry the upper or ten-pin frame B, being mounted on the inner ends of rock-shafts $d'd'$, while the levers ee , which carry the lower or nine-pin frame C, are mounted on the inner ends of rock-shafts $e'e'$, so that when the rock-shafts $d'd'$ are moved simultaneously

in the same direction the frame B is raised or lowered uniformly, and in the same manner a uniform rising-and-falling motion can be imparted to the frame C by means of the rock-shafts $e'e'$ and levers ee .

The rock-shafts $d'd'e'e'$ have their bearings in and extend through the side timbers T of the bowling-alley, and on their outer ends are mounted the levers $d^2 d^2 e^2 e^2$, respectively, and the levers $d^2 d^2$ on each side of the alley are connected by rods D D, while the levers $e^2 e^2$ are connected by rods E E.

F F' are the actuating-levers, which can be thrown in gear either with the rods D D or with the rods E E by the following means: Said levers are firmly mounted on a rock-shaft f , which is situated behind the rear board U and has its bearings in brackets g , secured to the side timbers T of the alley. From the lower ends of the levers F F' extend rods G G, the front ends of which engage pins h , which project from arms i . These arms are firmly mounted upon a rock-shaft j , which has its bearings in the side timbers T and on which is firmly mounted a lever H. When this lever is moved to the position shown in Fig. 2, the rods G G' are raised and thrown in gear with the rods D D by means of notches k , formed in the upper edges of the rods G G' and with studs l projecting from the rods D D, and when the lever H is moved to the position shown in Fig. 3 the notches k' in the lower edges of the rods G G' are thrown in gear with studs l' , projecting from the rods E E. Consequently if the lever H occupies the position shown in Fig. 2 the frame B, which carries the setting-guides b , is in gear with the actuating-lever F, and by moving this lever the frame B can be raised or lowered and the setting-guides can be moved into their active or inactive position, while the setting-guides c are not affected by the movements of the lever F, and if the lever H occupies the position shown in Fig. 3, the frame C, which carries the setting-guides c , is thrown in gear with the actuating-lever F and the last-named setting-guides can be moved into their active or inactive position, while the setting-guides b are not affected by the movements of the lever F. In the side timber T are secured studs V, which assist in guiding the rods D E. The lever H can be locked either in the po-

sition shown in Fig. 2 or in that shown in Fig. 3 by means of a stop *m*, which is inserted in one of the holes *m'* in the timber *T*. The actuating-lever *F* is locked in the position shown in Figs. 2 and 3 by a stop *n*, which is secured to the board *U*, and in order to retain it in this position the shaft *f* slides in its bearings and is subjected to the action of a spring *o*, which has a tendency to force it in the direction of arrow 1, Fig. 1. In order to release the lever *F* from the stop *n*, the shaft *f* must be moved against the action of the spring *o* until the lever *F* clears the stop.

The setting-guides *b c* are yielding, being set upon springs *p*, which are secured to the frames *B C*, so that when either set of setting-guides is raised to its active position and a ball or pin or other heavy article is dropped down upon them they can give and the setting-guides or their frames are not liable to become injured. The pins intended to be used on this bowling-alley are provided with sockets to engage the setting-guides.

I do not claim in this application for a pat-

ent anything shown and described in an application for a patent filed by me May 2, 1891, Serial No. 391,386.

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

1. The combination, with the pin-platform and with two sets of setting-guides, of an actuating-lever and means for throwing the lever in gear with either set of setting-guides, substantially as described.

2. The combination, with the perforated pin-platform, of a frame carrying the elastically-supported setting-guides, and means for raising and lowering these setting-guides through the perforations in the pin-platform, substantially as described.

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

ALBIN WARTII.

Witnesses:

WM. C. HAUFF,
E. F. KASTENHUBER.