A. A. HAMLIN.

Bowling-Alley.

No. 160,900. Patented March 16, 1875.

Fig: 2

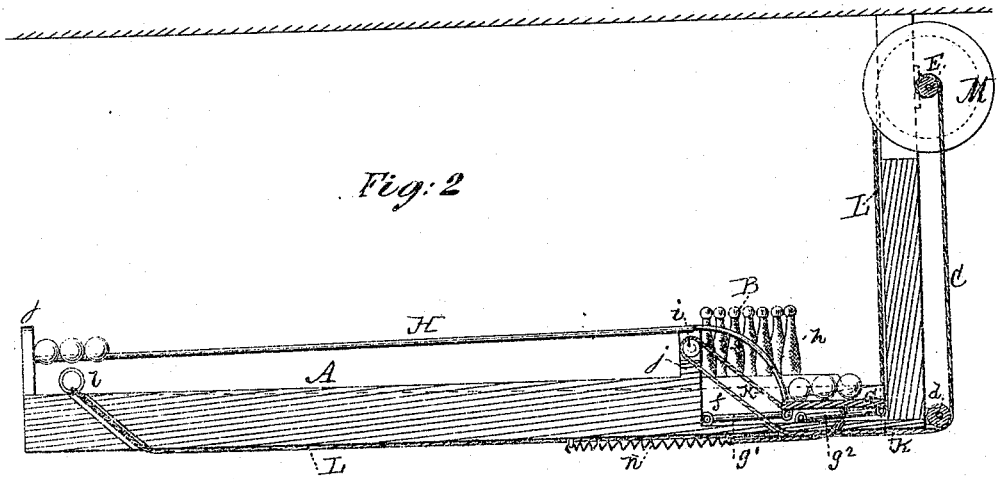


Fig: 1

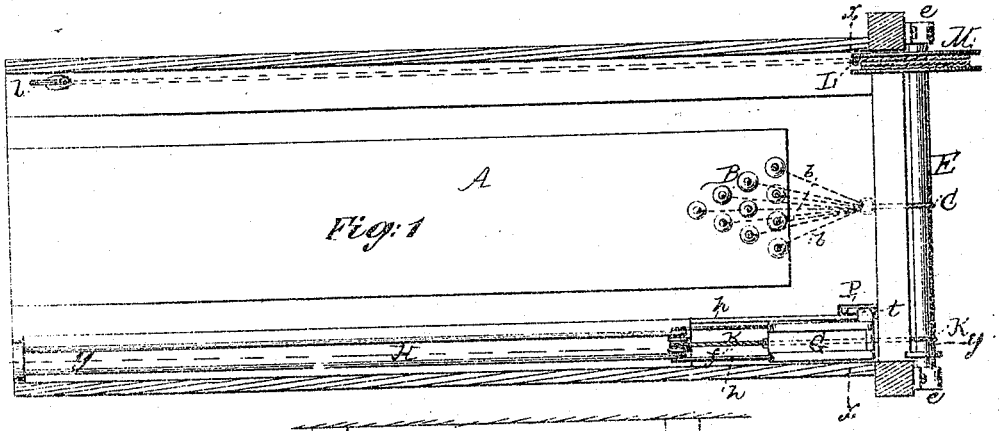
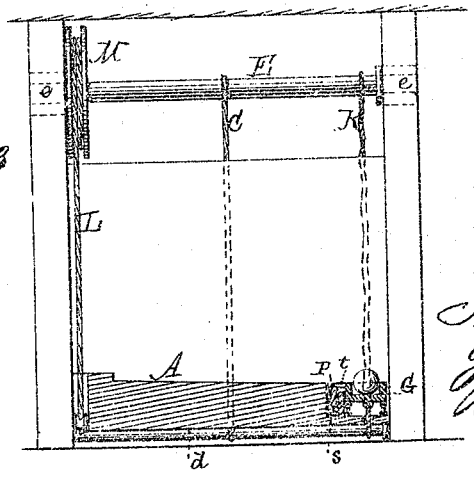


Fig: 3



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UNITED STATES PATENT OFFICE.

ALONZO A. HAMLIN, OF NEW YORK, N. Y.

IMPROVEMENT IN BOWLING-ALLEYS.

Specification forming part of Letters Patent No. **160,900**, dated March 16, 1875; application filed January 29, 1875.

To all whom it may concern:

Be it known that I, ALONZO A. HAMLIN, of the city, county, and State of New York, have invented certain Improvements in Bowling-Alleys; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

My invention relates to certain improvements which may be readily applied to large alleys or small tables; and it consists in a novel combination and arrangement of parts whereby the pins are set up and the balls returned by one and the same operation; and, further, in a device for limiting the number of balls returned to the player.

In the accompanying drawing, Figure 1 is a top view of my invention as applied to a bowling-alley. Fig. 2 is a longitudinal vertical section of the same, taken in the line *y y* of Fig. 1. Fig. 3 is a transverse vertical section taken in the line *x x* of Fig. 1.

A represents the bed of a bowling-alley, which may be arranged upon the floor, on a large scale, or may be applied to a small table. At the rear end of the alley the pins B are set up on the bed A. To the bottom of each pin is attached one end of a cord, *b*, which passes through a hole to the under side of the bed A, where the other ends of all the cords *b* are united and attached to the lower end of a cord, C, which passes under a roller, *d*, and has its upper end attached to a windlass, E, journaled in bearings *e* at a suitable distance above the bed. The rear end of the alley is slightly inclined downward, both toward the end and toward one side, so that one corner is lower than the other. In this lower corner is a recess, *f*, in which works the lifter for elevating and returning the balls. The lifter consists of a board, G, beneath which are pivoted swinging arms $g^1 g^2$, having their upper ends attached to the under side of the board, and their lower ends attached to the bottom of the recess *f*, so that the board in rising and falling will always maintain a uniform and parallel position. On one side of the alley is the return-channel H for the return of the balls to the players. Said channel consists of two rods running nearly the entire length of the alley, being supported near the ends, and at any other suitable points, by standards *j*. The rear ends *h h* of the rods or wires which form the return-channel are curved downward from the standard *j* to form an arc of a circle, of which the lower pivot of the arm g^1 forms the center. In the forward end of the lifter G are two holes, through which pass the curved portions *h h* of the rods. Instead of the holes in the lifter, the wires may be run through eyes or staples attached to the board. The curved portions *h h*, thus connected with the lifter, serve as guides to insure its working in the proper manner. To the front end of the lifter is attached a cord, K, which passes upward and over a pulley, *i*; then downward in the recess *f*, under the bed A and roller *d*, and then upward to the windlass E, where it is attached. The windlass E is provided with a purchase-wheel, M, to which is attached one end of a cord, L, which passes downward and under the bed A to the front end of the alley, where it projects above the same, and is provided with a ring, *l*, or other suitable handle.

When the cord L is pulled the purchase-wheel M revolves, and with it the windlass E, winding the cords C and K around the windlass, and thus setting up the pins, and raising the lifter to return the balls by one and the same operation. As the lifter G rises it is guided by the curved portions *h h* until its front end is as high as the straight portion of the rods, when the balls leave the lifter and roll along the channel H to the front end of the alley, as shown in Fig. 2. When the cord L is released the lifter returns to its former position in the recess *f*, and the pins remain upright.

In a large alley the weight of the lifter is sufficient to return it to its lower position; but in a small alley or table the lifter may be provided with a spring, *n*, to insure its proper return.

If desired, the cord L may be carried upward and along the ceiling or side wall without changing the operation.

The capacity of the lifter is limited to a certain number of balls; and when it is raised to return the balls, if there should be at the rear end of the alley any balls besides those on the lifter, they are prevented from dropping into the recess *f* by means of a board, P, arranged

to slide vertically in the bed A, and provided with a spring, *s*, placed under it. When the lifter G rises the spring *s* raises the board P far enough above the surface of the bed to arrest the balls and prevent them from falling into the recess; and when the lifter descends a lug, *t*, thereon presses down the board P, so as to allow the balls to roll on the lifter.

The cord K is somewhat shorter than the cord C, or is attached to the windlass more tightly, so that it will operate to raise the lifter before the cord C begins to operate on the pins to set them up. By this means the lifter may be raised to return the balls without interfering with the pins in case they were not disturbed by the balls just previously rolled.

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

1. The lifter G, arranged to work in the recess *f*, and provided with the pivoted swinging arms g^1 g^2 and cord K, substantially as shown and described.

2. The combination of the cord L, purchase-wheel M, and windlass E with the cord C, connected with the pins, and the cord K, connected with the lifter, whereby the pins are set up and the balls lifted and returned by one and the same operation, substantially as shown and described.

3. The spring-board P, constructed and arranged to operate as shown and described, for the purpose specified.

ALONZO A. HAMLIN.

Witnesses:

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