

No. 667,026.

Patented Jan. 29, 1901.

E. LUBITZ.
TOY BOWLING APPARATUS.

(Application filed July 5, 1900.)

(No Model.)

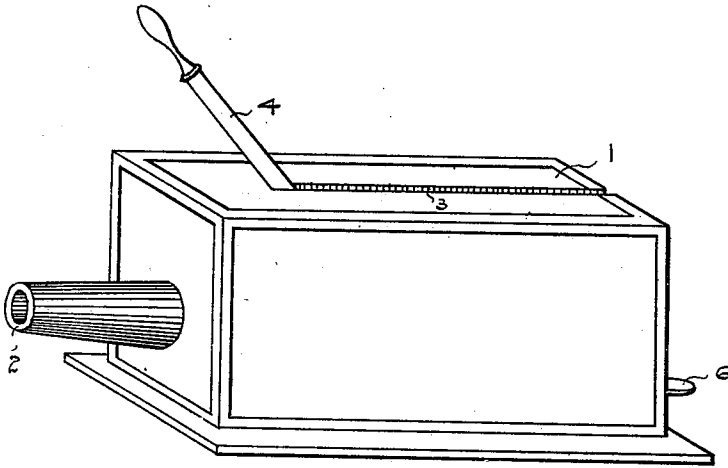


FIG. 1.

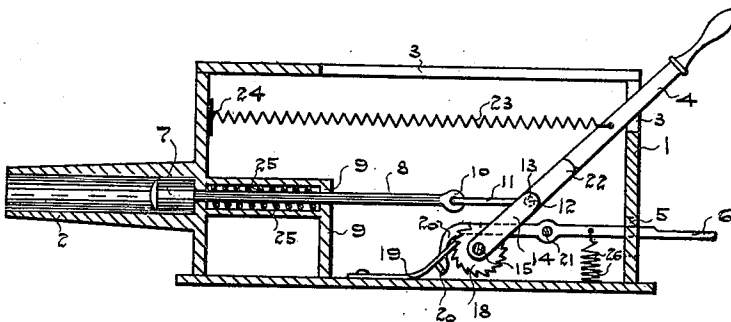


FIG. 2.

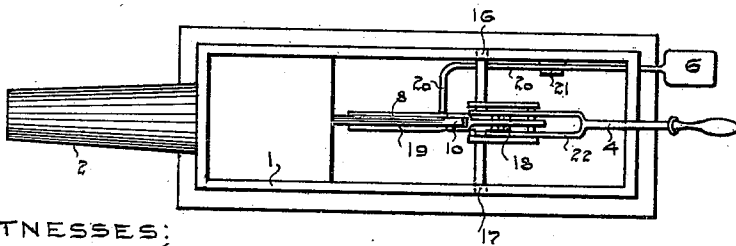


FIG. 3.

WITNESSES:

Stefan Melzer.
George Rogers

INVENTOR:

Ernst Lubitz

UNITED STATES PATENT OFFICE.

ERNST LUBITZ, OF CHICAGO, ILLINOIS.

TOY BOWLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 667,026, dated January 29, 1901.

Application filed July 5, 1900. Serial No. 22,653. (No model.)

To all whom it may concern:

Be it known that I, ERNST LUBITZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Automatic Bowling Apparatus, of which the following is a specification.

The object of my invention is to provide apparatus which will do away in a large measure with the active handling of the balls. This object is accomplished by means of the apparatus hereinafter set forth, and illustrated in the accompanying drawings, in which—

15 Figure 1 is a perspective view of apparatus constructed according to my invention. Fig. 2 is a vertical longitudinal section thereof, and Fig. 3 is a top plan view thereof with the cover removed.

20 Referring now to said drawings, 1 indicates an oblong casing having the barrel or guidetube 2 projecting therefrom centrally at one end. In the top of the casing is a longitudinal slot 3, through which projects the resetting-lever 4, movable back and forth along
25 said slot. At the rear end of the casing there is also a vertical slot 5, in which the releasing trigger or step 6 plays. The barrel 2 forms a guide for the plunger-head 7, the reduced stem 8 of which passes through a tubular socket in rear of the barrel and through a
30 guide-aperture in the bracket 9 and is connected at its end 10 with a link 11, which in turn is pivoted to a crank-pin 13 from the crank 14, attached to the transverse rock-shaft 15. A coiled spring 25, seated in the just-mentioned socket, exerts its thrust against the plunger-head to urge the latter away from the crank and toward the mouth of the barrel.

40 The transverse shaft 15 is journaled at 16 and 17 and carries the ratchet-wheel 18, keyed or splined thereto, so that the revolution of the one shall induce the revolution of the other. Said ratchet-wheel is normally engaged by a spring-pawl 19, whereby the shaft and crank are held against the stress of the thrust-spring 25, which tends to throw the plunger out. The pawl 19 is disengaged by means of the bent arm 20, arranged to come
50 beneath it and forming an integral part of the releasing-trigger pivoted at 21, so that when the step 6 is depressed said arm 20 will

be raised against the spring-pawl and lift it out of engagement with the ratchet-wheel, releasing the thrust-spring, if the latter has
55 been compressed, and permitting it to shoot the plunger forward.

The resetting-lever is rigidly attached to the shaft by its forked lower end 22 bridging the ratchet-wheel and is connected about the
60 middle of its height by relatively weak spring 23 with the forward end 24 of the case, the object of this spring being to overcome the inertia of the lever when the trigger-pawl is released and permit the full force of the thrust-
65 spring 25 to be exerted upon the plunger.

In operation the mechanism is set or reset by pulling the lever 4 back to a limit determined by the force it is desired to impart to the stroke upon the ball. The trigger-pawl
70 then drops behind the ratchet-tooth, registering therewith, and holds the plunger in its retracted position against the force of its compressed thrust-spring. The apparatus is now positioned with reference to the ball and the
75 nature of the impelling blow to be struck, the trigger is depressed, releasing the pawl from the ratchet, and the plunger flies forward to the mouth of its barrel and delivers the blow. In this movement the resetting-lever swings
80 forward with the shaft, at first under the drag of its own spring 23; but at the end of the traverse its momentum is added, through the crank and connecting-link, to the weight and solidity of the blow struck by the plunger
85 upon the ball. To reset the mechanism for another operation, it is simply necessary to pull the lever 4 again to the rear.

I claim—

1. The combination, in automatic bowling
90 apparatus, of the plunger, a guide therefor, a thrust-spring acting upon said plunger, the plunger-stem, the transverse rock-shaft and a crank-arm therefrom to which the plunger-stem is link-connected, the ratchet-wheel se-
95 cured to said shaft, the pawl engaging said ratchet-wheel, the trigger for releasing said pawl, and the resetting-lever fixed to said rock-shaft.

2. The combination, in automatic bowling
100 apparatus, of the plunger, a guide therefor, a thrust-spring acting upon said plunger, the plunger-stem, the transverse rock-shaft and a crank-arm therefrom to which the plunger-

stem is link-connected, the ratchet-wheel secured to said shaft, the pawl engaging said ratchet-wheel, the trigger for releasing said pawl, the resetting-lever fixed to said shaft, 5 and the independent spring for overcoming the inertia of said lever as the plunger is shot forward.

3. The combination in automatic bowling apparatus, of the guide-barrel, the plunger- 10 head working therein, the socket at the rear of said barrel, the thrust-spring inclosed in said socket and pressing against the plunger-head, the plunger-stem passing through said spring and socket, the transverse shaft and 15 its crank-arm to which the plunger-stem is

link-connected, the ratchet-wheel on said shaft, the pawl engaging said ratchet-wheel to hold the plunger against the force of the thrust-spring, the releasing-trigger for disengaging said pawl, the resetting-lever for 20 rocking the transverse shaft to retract the plunger and reengage the pawl, and the independent spring to overcome the inertia of said lever.

Dated Chicago, Illinois, this 24th day of 25 March, 1900.

ERNST LUBITZ.

Witnesses:

ALFRED MELTZER,
KARL HEIN.