P. LUCAS.

TOY CANNON.

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Fig. 1.

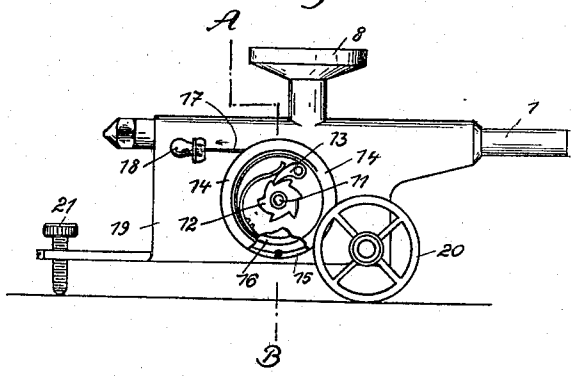


Fig. 2.

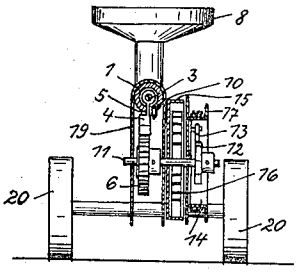
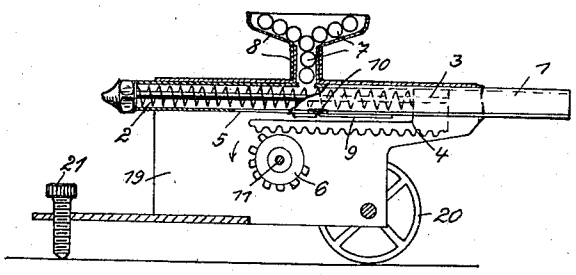


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TOY CANNON.

1,195,597. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed March 29, 1916. Serial No. 87,420.

To all whom it may concern:

Be it known that I, PAUL LUCAS, a subject of the King of Prussia, residing at No. 29 Taunusstrasse, Berlin-Friedenau, Germany, have invented certain new and useful Improvements in Toy Cannons, of which the following is a specification.

My invention relates to an improvement in toy-cannons and machine-guns, by which balls or bolts are thrown out of a barrel in quick succession.

In toy cannons, repeating cannons and rapid-fire cannons of the kind already known the balls or projectiles are hurled forth from the barrel by a plunger connected to a spring which spring is compressed and set free by a crank-handle.

According to my present invention, I contract the actuating spring by means of a traction element, such as a string, cord, wire or chain wound up on a wheel or drum on the axis of a wheel carrying teeth only on a part of its circumference, the said wheel gearing into a rack or a similar element sliding on the rod to which the said spring is wound and thereby compressing said spring for a certain amount and setting the said rack free when the toothed part of the said wheel comes out of engagement with the rack. The said rack carries or forms the propulsory plunger and the moment when the said rack comes free of the retracting wheel, it will be pushed forward by the contracted spring and throw the ball out of the barrel.

According to one modification of this invention, a spring is connected to the axis of the partly toothed wheel and the drum carrying the traction element; said spring serves to return the said traction element to its original position when given free by the hand which has pulled the same forth. The said traction element, preferably, has such a length, that, in drawing it out, it will cause a repeated engagement of the partly toothed wheel with the rack, and, in consequence, a repeated discharge of the gun.

Owing to the new device, a series of shots may be delivered in quick succession by pulling the traction element from the drum or wheel in a straight line and the cannon does not require to be fixed in position while being discharged, against the hopping movements caused by turning the known crank-handle. Also, when the gun has a low carriage and the crank-axis is positioned near the ground, the hand, on turning the crank-handle, is liable to strike the ground at each turn. With the gun of my present invention, the gun need only be kept by one hand against being drawn back, while the other hand pulls the traction-element in a straight line to the rear.

To make my invention perfectly understood, I have illustrated the same by the accompanying drawings, in which:

Figure 1 is a side-elevation of a toy cannon according to my present invention; Fig. 2 being a section according to the broken line A—B of Fig. 1, and Fig. 3 is a longitudinal section through the cannon.

In the said drawings, 1 designates the barrel of the gun carried by a suitable casing, such as 19, which may be mounted on wheels 20 and be provided with a screw for adjusting the elevation by turning said screw 21 downward or upward. Within the said barrel 1 a rod 3 is centrally held, the said rod being freely surrounded by a spring 2, the forward end of which bears against a plunger or projection of a rack 4 arranged to slide forward and backward below the barrel 1, the plunger of said rack projecting into the barrel through a slot in the bottom of said barrel.

Into the teeth or incisions of the rack engage the teeth of a wheel 6 to draw the rack toward the operator and thereby to compress the spring 2 on the rod 3. When the last tooth of the series leaves engagement with the teeth of the rack, the latter one is set free to be hurled forward by the spring 2 and the rack 4 is thrown into its forward position, as shown in Fig. 3. The said wheel 6 is mounted on a shaft 11 which traverses the casing 19, a spring-barrel 15 adjacent to the side of said casing and a drum 14 around which the traction element, preferably a string or cord, 17, is wound up. A spiral spring 16 surrounds the shaft 11 within the spring-barrel 15, one end of the said spring being secured to the shaft 11 and the other end to the casing 15. Within the said drum 14 a ratchet wheel 12 is fixed to the shaft 11 and a ratchet 13 engages into the teeth of said ratchet-wheel 12 under the pressure of a spring, as shown in Fig. 1. The string 17 carries a knob or button 18 at its extremity, said extremity being guided through a lug to prevent the free end of

the string from being carried too far to the right of Fig. 1.

The projectiles may properly consist of small-shot or little balls which automatically fall down, one by one, before the plunger when it is withdrawn behind the opening of the passage of a hopper 8 mounted on the casing 19. The slot 5 in the lower side of the barrel 1 extends rearward up to such length to stop the rearward throw of the plunger. The small-shot 7 are prevented from all falling from the hopper 8 down before the plunger when it is in its retreated position and the barrel is pointed downward by a spring 9 below the slot in the lower side of the barrel 1, said spring projecting into said slot at 10 in a known manner to engage the first shot and prevent it from rolling forward, the first shot then serving to hold the others in place.

I am aware that toy-cannons are known and have been used before carrying a hopper containing small-shot to be automatically delivered before the plunger throwing them out of the barrel by the action of a spring, but

What I claim is:

1. A toy-cannon comprising a barrel, a hopper automatically feeding projectiles into said barrel, one by one, a spring longitudinally extending within said barrel, a plunger projecting into the barrel and compressing the spring in its backward movement, a toothed wheel engaging said plunger and releasing the same during part of each turn, and a flexible traction element so combined to the axis of said toothed wheel, that a retrograde draft of said traction-element will deliver a plurality of shots.

2. A toy-cannon comprising a barrel, a hopper automatically feeding projectiles into said barrel, a spring longitudinally extending within said barrel, a plunger projecting into the barrel and compressing the spring in its backward movement, a partly toothed wheel engaging said plunger and releasing the same during part of each turn, a flexible traction-element wound on a drum, a ratchet wheel on the axis of the said partly toothed wheel, said ratchet wheel being engaged by a click of the drum, and a spring barrel including a spring for returning the drum and traction element automatically into the normal position when the traction-element has been set free.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL LUCAS.

Witnesses:
HENRY HASPER,
ALLEN F. JENNINGS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."