O. E. DROEGE AND G. A. ROBINSON.

TOY CANNON.

APPLICATION FILED SEPT. 12, 1918.

1,306,584.

Patented June 10, 1919.

2 SHEETS-SHEET 1.

Fig. 1.

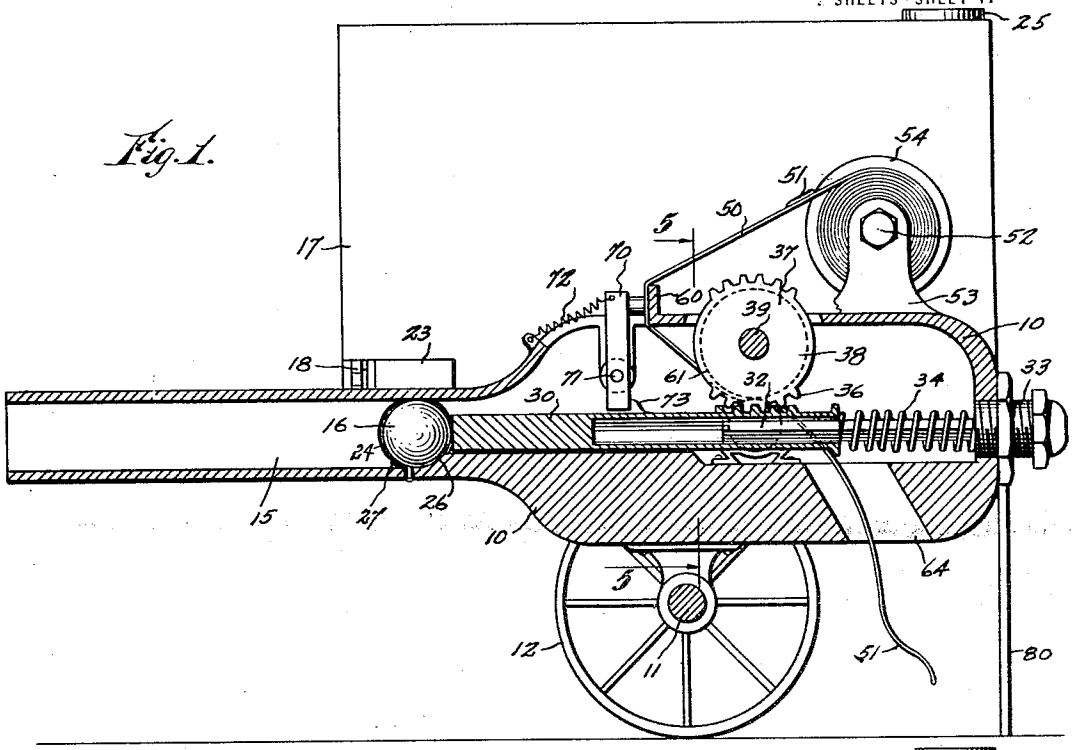
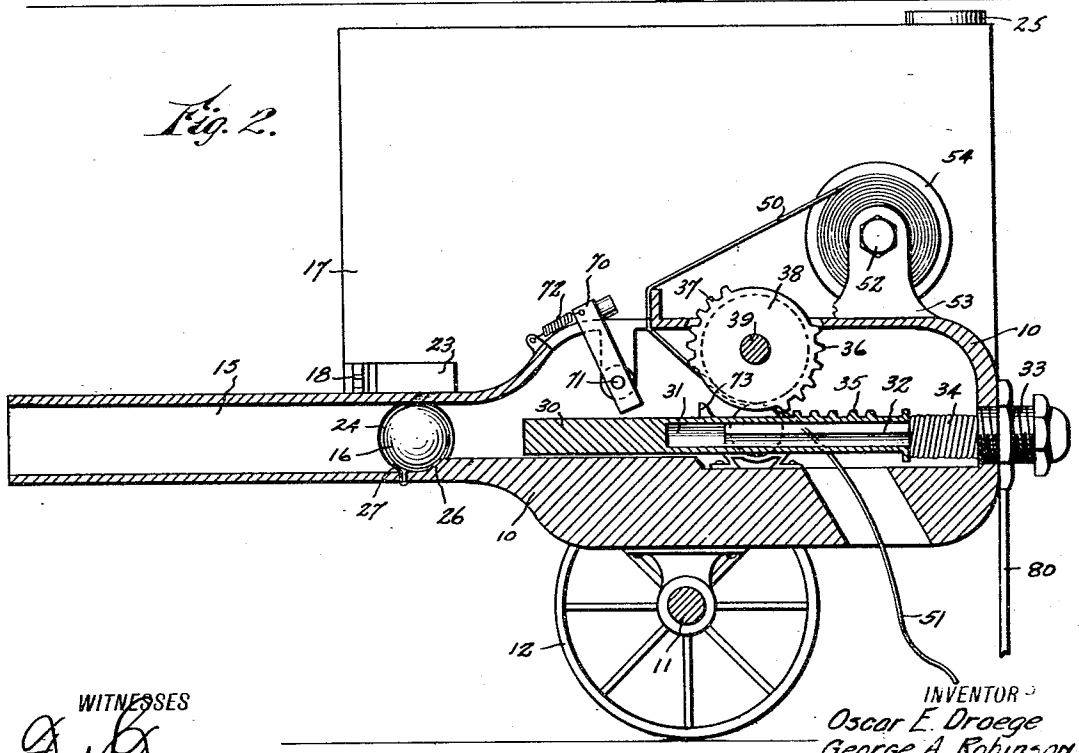


Fig. 2.



WITNESSES

Frank L. Taggart

Harry Hoover

INVENTORS

Oscar E. Droege

George A. Robinson,

BY Munn & Co

ATTORNEYS

O. E. DROEGE AND G. A. ROBINSON.

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2 SHEETS—SHEET 2.

Fig. 3.

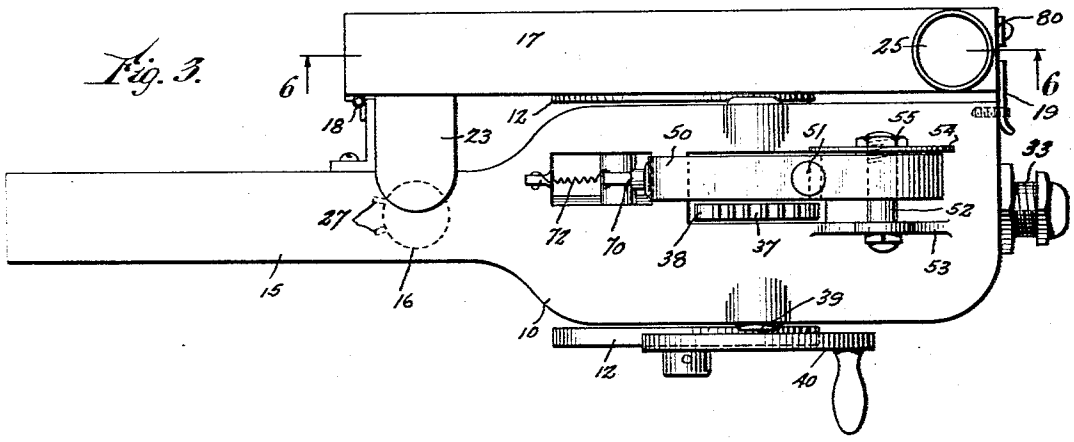


Fig. 5.

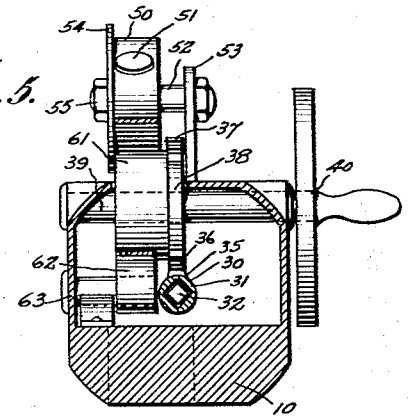


Fig. 4.

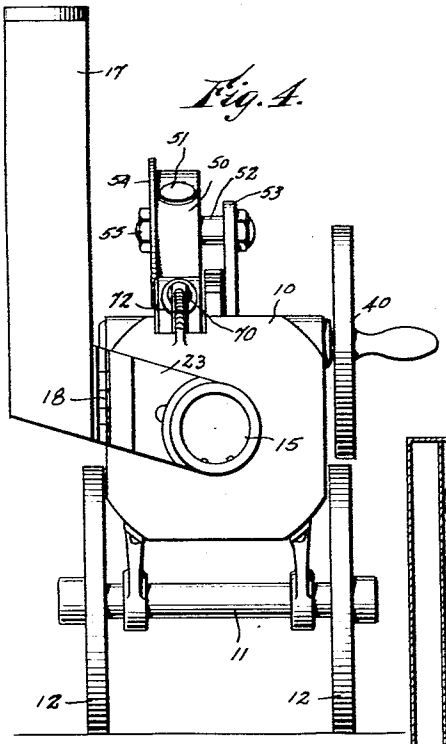


Fig. 6.

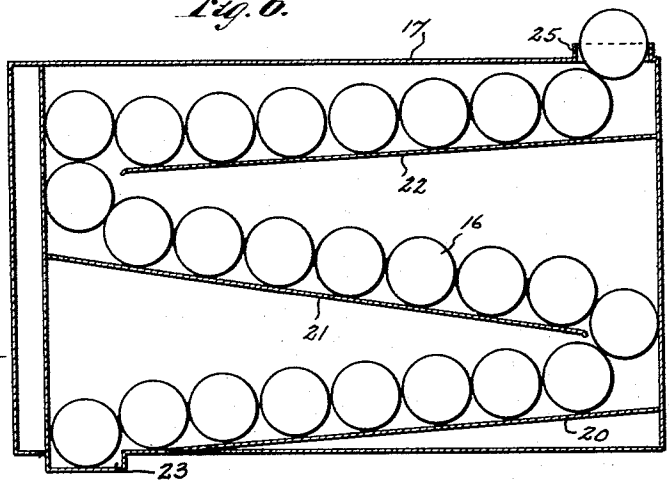


Fig. 7.

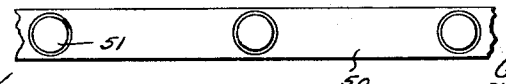


Fig. 8.



WITNESSES

Frank J. Faggiani.

Percy J. Porter

INVENTORS

Oscar E. Droege,

George A. Robinson,

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

OSCAR E. DROEGE, OF POMPTON LAKES, NEW JERSEY, AND GEORGE A. ROBINSON, OF NEW YORK, N. Y.

TOY CANNON.

1,306,584. Specification of Letters Patent. Patented June 10, 1919.

Application filed September 12, 1918. Serial No. 253,757.

To all whom it may concern:

Be it known that we, OSCAR E. DROEGE, a citizen of the United States, and a resident of Pompton Lakes, in the county of Passaic and State of New Jersey, and GEORGE A. ROBINSON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Toy Cannon, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved toy cannon arranged to permit of successively loading the barrel with projectiles from a magazine, ejecting such projectiles from the barrel, and simultaneously exploding percussion caps to simulate the action of a regular gun. Another object is to enable the user to accomplish the loading, ejecting and firing on turning a single crank thus simulating a rapid fire gun. Another object is to accomplish the results as stated by mechanism which is very simple and durable in construction and not liable easily to get out of order.

With these and other objects in view, the invention consists of certain novel features of construction, as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal central section of the toy cannon;

Fig. 2 is a similar view of the same with the ejecting plunger and the firing hammer in retracted positions;

Fig. 3 is a plan view of the toy cannon;

Fig. 4 is a front end elevation of the same;

Fig. 5 is a cross section of the same on the line 5—5 of Fig. 1;

Fig. 6 is a sectional side elevation of the magazine on the line 6—6 of Fig. 3;

Fig. 7 is a face view of a portion of the strip carrying the explosive caps in spaced relation; and

Fig. 8 is an edge view of the same.

The support 10 of the toy cannon is preferably in the form of a carriage having an axle 11 and wheels 12, and on the front end of the support 10 is held a barrel 15 adapted to shoot projectiles 16 in the form of balls to the rear end of the barrel 15 from a magazine 17 connected by a hinge 18 to the support 10. The hinge 18 is located at the forward end of the magazine 17 and the rearward end thereof is provided with a suitable locking device 19 for normally locking the magazine in position on the support 10 (see Fig. 3). The magazine 17 is provided with a number of inclined runways 20, 21 and 22 for supporting a series of projectiles 16 and inclined alternately in opposite directions, to allow the projectiles to roll down the inclines from one to the other by their own weight to finally pass from the lower end of the lowermost incline 20 into a transversely extending delivery pipe 23 connected with an opening 24 formed in one side of the barrel 15 at the rear end thereof. The magazine 17 is provided on the top with a filling opening 25 for filling the magazine with projectiles. The rear end of the barrel 15 is provided at the bottom with a segmental shoulder or seat 26 for the projectile 16 to be seated on, and forward of the seat is arranged a flexible retaining strip 27 adapted to engage the front lower portion of the projectile to hold the latter in position on the seat 26 until forcibly ejected through the barrel 15 by a plunger 30. On swinging the magazine outward the user can feed projectiles 16 by hand through the opening 24 into the barrel 15.

The plunger 30 extends lengthwise and is in general alinement with the barrel 15, and the rear end of the plunger 30 is provided with a polygonal bore 31 slidably fitting on a pin 32 attached by a screw 33 to the back of the support 10. A spring 34 is coiled on the pin 32 and is interposed between the inner end of the screw 33 and the rear end of the plunger 30 to move the latter forward after the plunger is retracted and released, as hereinafter more fully explained. The top of the plunger 30 is provided with a rack 35 adapted to be successively engaged by two sets of teeth 36 and 37 of a mutilated gear wheel 38 secured on a transverse shaft 39 journaled in suitable bearings arranged on the support 10. One outer end of the shaft 39 is provided with a crank arm 40 under the control of the user of the cannon for turning the shaft 39 and with it the mutilated gear wheel 38 to cause the corresponding set of teeth 36 to slide the plunger 30 rearwardly to compress the spring 34 and

to release the plunger after the last tooth has moved out of engagement with the rack 35 to permit the spring to forcibly slide the plunger 30 forward in engagement with the projectile 16 to eject the latter forcibly from the barrel 15 onto a distant target.

In order to provide an explosion each time a projectile 16 is ejected from the barrel, the following arrangement is made: A strip 50 of paper or other suitable material is provided with percussion caps 51 spaced equal distances apart and this strip is wound up in a roll and mounted on a stud 52 supported on a bracket 53 attached to the top of the support 10. A flange 54 is held in place on the stud by a nut 55 to prevent accidental displacement of the roll of percussion caps. The strip 50 after unwinding is passed over an anvil 60 attached to or forming part of the support 10 and then the strip passes between two feed rolls 61 and 62, of which the feed roll 61 is secured to the shaft 39 and rotates with the latter while the feed roll 62 is journaled on a stud 63 attached to the support 10. The strip 50 after leaving the feed rolls passes down through an opening 64 formed in the bottom of the support 10. The feed rolls 61 and 62 are arranged to feed the strip 50 forward a distance corresponding to that between the centers of adjacent percussion caps 51 at each half revolution of the shaft 39, and each percussion cap 51 during the travel of the strip 50 comes in position on the anvil 60, at the time the firing hammer 70 is released, to explode the percussion cap at the time the projectile 16 is ejected from the barrel 15 by the action of the plunger 30, as above explained. The hammer 70 is fulcrumed at 71 on the support 10 and is pressed on by a spring 72 to normally hold the hammer in the retracted position shown in Fig. 2. The lower end of the hammer 70 projects into the path of a lug 73 attached to the top of the plunger 30 so that when the latter moves forward by the action of the spring 34, as previously explained, then the lug 73 strikes the hammer 70 and swings rearward into engagement with the percussion cap 51 in position on the anvil 60 at the time to explode such percussion cap.

The rear end of the magazine 17 is preferably provided with a pivoted leg 80 to maintain the magazine and support the same in the normal position shown and with the barrel 15 extending horizontally.

The operation is as follows:

When the magazine 17 is loaded with projectiles 16 and the lowermost one thereof has passed into the barrel 15 as shown in Figs. 1 and 2, and the operator turns the shaft 39 then the mutilated gear wheel 38 retracts the plunger 30 against the tension of the spring 34 and finally releases the plunger 30 so that the plunger is moved forward and ejects the ball 16 from the barrel 15. During the rearward movement of the plunger 30 by the action of the mutilated gear wheel 38 as described, the strip 50 is fed forward by the action of the feed rolls 61 and 62 so that a percussion cap 51 is at the anvil 60 at the time the plunger 30 is released and slides forward. When this takes place the lug 73 of the plunger actuates the normally retracted hammer 70 whereby the percussion cap at the anvil 60 is exploded practically at the time when the projectile 16 is ejected from the barrel 15.

As soon as the ball 16 is ejected the next following ball in the magazine passes into the barrel 15 and is next ejected on continuing the turning operation of the shaft 39, as above explained. Thus by the arrangement described the operator on continually turning the crank arm 40 can successively eject the projectiles from the barrel and simultaneously explode successive percussion caps 51 thus simulating the action of a rapid fire gun.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:—

1. A toy cannon, comprising a support, a barrel on the support, a magazine mounted on the support and opening into the rear end of the barrel to successively charge the barrel with projectiles, a spring pressed plunger mounted on the support and adapted to eject the projectile out of the barrel, a percussion cap firing device mounted on the support, manually controlled means mounted on the support for retracting and releasing the said plunger, and means for actuating the said cap firing device from the plunger.

2. A toy cannon, comprising a support, a barrel held on the support, a spring pressed plunger mounted on the support and adapted to eject a projectile loaded in the rear end of the barrel, an anvil, means for feeding a strip of percussion caps over the anvil, a spring retracted hammer, manually controlled means mounted on the said support and adapted to retract and release the said plunger and means for operating the hammer from the plunger.

3. A toy cannon, comprising a support, a barrel on the support, means for feeding projectiles into the barrel, a spring pressed plunger, means for retracting the plunger against the action of its spring and then releasing the same, an anvil, means controlled by the plunger operating means for feeding a strip of percussion caps over the anvil, a pivoted and spring retracted hammer for exploding the caps, and means for operating the hammer from the plunger.

4. A toy cannon, comprising a support, a barrel on the said support, a plunger slidable on the support in alinement with the barrel to eject a projectile from the barrel, the plun-

ger having a rack, a spring pressing the plunger forwardly, a revoluble mutilated gear wheel having oppositely disposed sets of teeth to mesh with the said rack to retract the plunger against the tension of the spring and to then release the plunger, whereby the plunger will be operated twice at each revolution of the gear wheel, and means for turning the said gear wheel.

5. A toy cannon, comprising a support, a barrel on the said support, a plunger slidable on the support in alinement with the barrel to eject a projectile from the barrel, the plunger having a rack, a spring pressing the plunger forwardly, a mutilated gear wheel adapted to mesh with the said rack to retract the plunger against the tension of the spring and to then release the plunger, a pair of feed rollers for feeding a strip of percussion caps and of which one turns with the said mutilated gear wheel, an anvil fixed on the support and over which passes the said strip of percussion caps, a spring pressed hammer adapted to fire the percussion caps on the said anvil, a lug on the said plunger adapted to actuate the said hammer, and means for turning the said gear wheel.

6. A toy cannon, comprising a support, a barrel on the said support and provided at one side with an opening for the entrance of a projectile, and a magazine hinged on the said support and having an outlet connected with the said barrel opening to allow the projectiles in the magazine to pass through the said opening into the barrel, and means for ejecting the projectiles from the barrel.

OSCAR E. DROEGE.
GEORGE A. ROBINSON.