R. N. & H. C. LAUDERMILCH.

SPRING GUN.

APPLICATION FILED MAR. 31, 1909.

937,078. Patented Oct. 19, 1909.

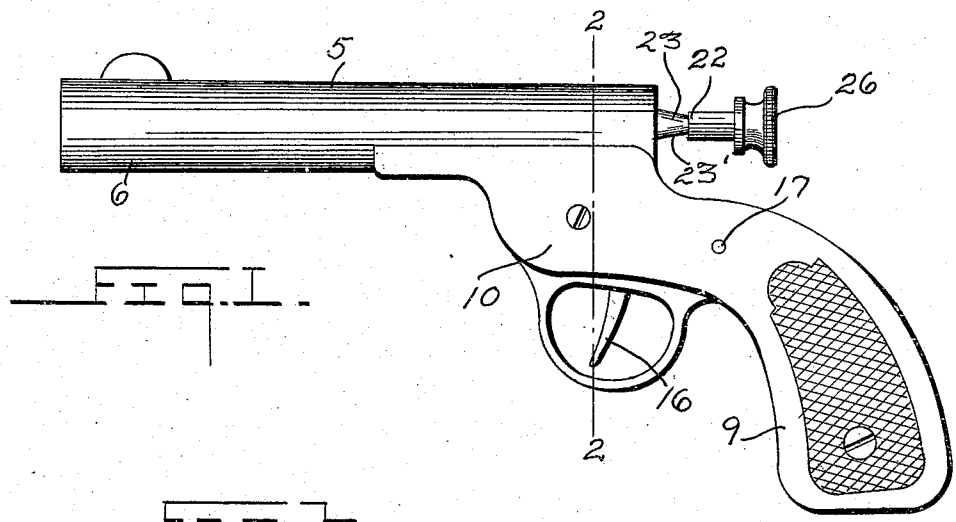

Fig. 1.

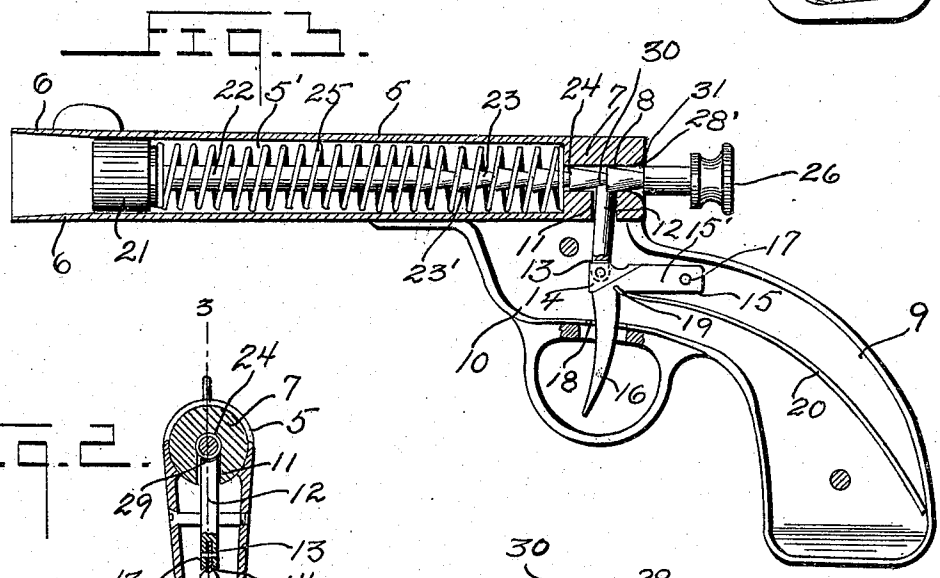

Fig. 3.

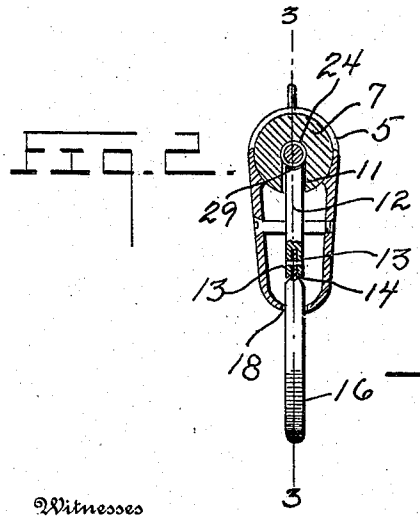

Fig. 2.

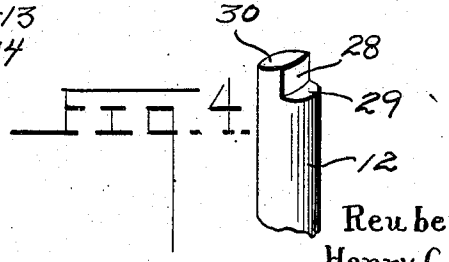

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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SPRING-GUN.

937,078. Specification of Letters Patent. Patented Oct. 19, 1909.

Application filed March 31, 1909. Serial No. 487,030.

To all whom it may concern:

Be it known that we, REUBEN N. LAUDERMILCH and HENRY C. LAUDERMILCH, citizens of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, and Halifax, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Spring-Guns, of which the following is a specification.

This invention relates to the class of toys, and more particularly to that type of toy known as a catapult, and has for its object to provide a toy of this kind in the form of a pistol, which may be used for the projection of marbles or other small spheres, and which may or may not be used in connection with specific articles to be struck.

Another and principal object of the invention is to provide a toy of this kind including a plunger movable in a barrel, the plunger being so arranged that it may be set to impart a predetermined velocity to the marble, and which will be also so arranged that rotation of the plunger within the barrel will have no effect upon the operation of the pistol.

Another object is to provide a structure especially arranged to prevent binding of the plunger during its movement through the barrel.

Another and particular object is to provide a barrel so arranged that marbles of different sizes within certain limits may be engaged therewithin in a manner to prevent their premature disengagement.

Other objects and advantages will be apparent from the following description, and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of the present toy complete, Fig. 2 is a transverse section taken in the plane of the stop pin on line 2—2 of Fig. 1, Fig. 3 is a vertical longitudinal section taken on line 3—3 of Fig. 2. Fig. 4 is a detail view of the stop pin.

Referring now to the drawings, the present invention comprises a circular barrel 5, having its inner surface at its forward end portion flared as indicated at 6, although the outer surface of the barrel is uniformly cylindrical from end to end. The flare 6 permits of the engagement in the end of the barrel of marbles of different sizes within certain limits, the frictional engagement of the marble against the walls of the barrel preventing its accidental and premature discharge.

The rearward portion of the barrel 5 is formed solidly as indicated at 7, and this solid portion has a passage 8 formed therethrough, which is considerably smaller than the bore 5′ of the barrel, and which is disposed concentrically with the bore of the barrel. The passage 8 communicates with the bore of the barrel and opens through the rearward end of the portion 7, this rearward end lying above the upper forward portion of a grip 9 which is connected with the rearward portion of the barrel, and being flared as indicated at 28′. What may be termed a lock casing 10 is connected with the grip 9 and extends forwardly beneath the rearward portion of the barrel, this lock casing being hollow as is also the grip.

A vertical passage 11 is formed through the lower portion of the solid part 7 of the barrel 5, communicating with the horizontal passage 8 and also with the interior of the lock casing 10. This passage 11 receives a vertically disposed slidable stop pin 12, movable to bring its upper extremity into and out of the passage 8. At its lower end, the pin 12 is bifurcated, the spaced portions 13 extending longitudinally of the pistol, and these spaced portions are engaged at opposite sides of a transversely reduced corner portion 14 of a trigger member 15. This trigger member includes a rearwardly extending horizontal arm 15′, and a downwardly extending finger piece 16. The arm 15′ is pivoted at its rearward end upon a transverse pin 17 engaged in the sides of the grip 9, and the finger piece 16 extends downwardly through an opening 18 in the lower portion of the lock casing. The finger piece 16 and arm 15′ extend at right angles to each other as shown, and in the angle thus formed there is provided a slot 19, receiving the upper end of an actuating spring 20 which extends downwardly and rearwardly within the grip and bears against the walls of the grip to hold the trigger member normally

against downward movement and with the stop pin 12 projected into the passage 8.

Slidably disposed the barrel 5, there is a plunger 21, which is mounted upon the forward end of a rod 22. This rod has its rearward portion slidably engaged in the passage 8, within which it fits snugly, and the rearward portion of the rod consists of a plurality of frusto-conical sections 23, each of the sections from front to rear connecting at its minor end with the succeeding section. The bases of the sections thus form a plurality of forwardly directed circular shoulders 24. Surrounding the rod 22 there is a helical spring 25, which engages at its forward end against the plunger 21 and at its rearward end against the forward end of the solid portion 7 of the barrel. This spring thus normally holds the plunger projected at the forward limit of its movement, and this forward motion of the plunger is limited by a head 26 carried by the rearward end of the rod 22.

As will be seen, the head 26 may be grasped and the rod 22 moved against the action of the spring 25. The upper end of the pin 12 will, during this operation, come into successive engagement with the slanting faces 23′ of the sections 23, and will be moved downwardly against the action of the spring 20, until each of the shoulders 24 is passed, when the pin 12 will spring upwardly and engage against this shoulder to prevent movement of the rod under the action of the spring 25. The tension of the spring 25 may thus be set to suit different conditions, and it will be seen that when the finger piece 16 is moved rearwardly, the pin 12 will be brought downwardly out of engagement with the rod 22, and the spring 25 will propel the plunger 21 forwardly, thus ejecting a marble from the barrel. In order to facilitate the engagement of the pin 12 with the rod 22, the upper end of the pin is, at its rearward portion, cut away to produce a rearwardly directed flat face 28, and an upwardly directed face 29, this face 29 being concaved to fit against the curved face of the rod 22 as will be understood. The upper face of the pin 12 forwardly of the face 28, indicated at 30, is slanted downwardly and forwardly and is concaved, this face 30 being thus formed to fit against the slanting faces 23′ of the sections 23.

From the foregoing, it will be observed that if the rod 22 is revolved during its rearward motion, the operation of the pistol will not be effected, for the reason that, as brought out, the shoulders 24 extend around the entire circumference of the rod.

It will be particularly observed that the sections 23 at their major ends are of the full diameter of the rod, so that they fit snugly within the passage 8 and prevent lateral movement of the rod which would result in wear of the plunger within the barrel and a tendency of the plunger to bind, which would impede its motion and effect the impetus imparted to the marble, and that, the rearward end of the passage being flared, the catching of the rod on the portions surrounding the passage is prevented.

What is claimed is:

1. In a spring gun, the combination with a barrel, said barrel having a solid portion at its rearward end, said solid portion having a passage formed therethrough of less diameter than and concentrically with the bore of the barrel, of a grip and lock casing connected with the barrel, said lock casing lying below the solid portion of the barrel, said solid portion having a vertical passage formed therethrough communicating with the first named passage and with the lock casing, a plunger disposed within the barrel, a rearwardly extending rod carried by the plunger and extending through the first named passage of the solid portion, a spring engaged with the rod between the plunger and the forward end of the solid portion, a stop pin slidably engaged in the vertical passage of the solid portion, a trigger member lying in the lock casing, said trigger member having a rearwardly extending arm and a downwardly extending finger piece, said rearwardly extending arm being pivoted within the grip, a spring engaged in the angle between the rearwardly extending arm and the downwardly extending finger piece and engaged against a wall of the grip to hold the trigger member yieldably with the stop pin against downward movement, said rod adjacent to its rearward portion including a plurality of rearwardly tapered sections, each of said sections being attached at its minor end to the section rearwardly thereof to produce a plurality of forwardly directed circular shoulders upon the rod, said stop pin being arranged for engagement of the different shoulders interchangeably to hold the plunger with the spring under tension, the major ends of said sections being of a size to fit snugly within the first named passage of the solid portion.

2. In a spring gun, the combination with a barrel having a solid rearward portion, said solid portion having a passage formed therethrough of lesser diameter than and concentric with the bore of the barrel, a stop pin movable at right angles into and out of position to project into the passage of the solid portion, a plunger within the barrel, a rod secured to the plunger and extending rearwardly through the passage of the solid portion, said rod having its rearward portion formed to produce a plurality of rearwardly tapered conical sections, each of said sections being connected at its minor end with the major end of the section rearwardly thereof, to produce a plurality of forwardly directed

circular shoulders, said stop pin being arranged for engagement of the shoulders, and a spring engaged with the rod between the forward end of the solid portion and the plunger, said solid portion being formed to produce a flare at the rearward end of its passage, to prevent catching of the circular shoulders against the end of the solid portion.

In testimony whereof we affix our signatures, in presence of two witnesses.

REUBEN N. LAUDERMILCH.
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Witnesses:
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