(Model.)

F. W. CRANDALL.

TOY SPRING GUN.

No. 355,975. Patented Jan. 11, 1887.

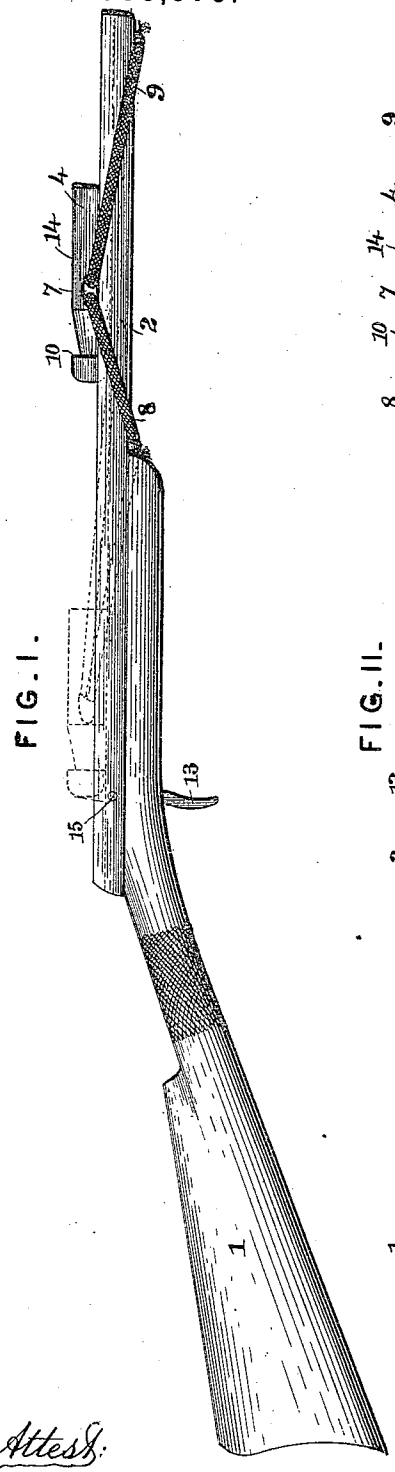


FIG. I.

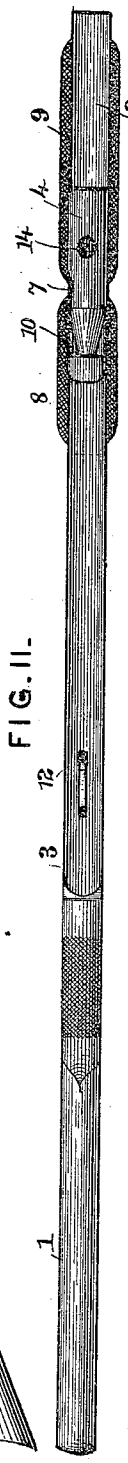


FIG. II.

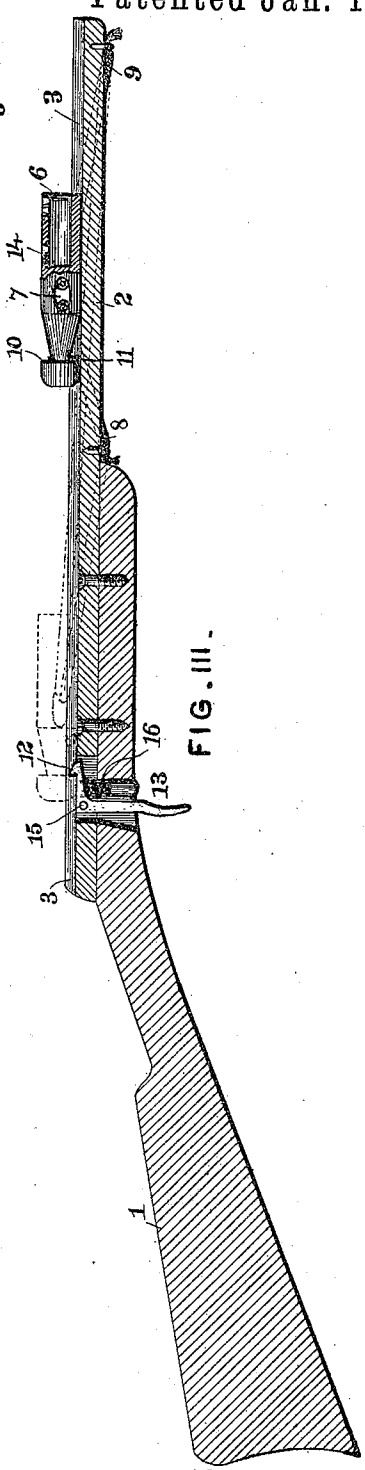


FIG. III.

Attest:
Geo. T. Smallwood.
F. A. Hopkins.

Inventor:
Fred W. Crandall
By Knight Bros. attys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRED W. CRANDALL, OF MONTROSE, PENNSYLVANIA.

TOY SPRING-GUN.

SPECIFICATION forming part of Letters Patent No. 355,975, dated January 11, 1887.

Application filed April 13, 1886. Serial No. 198,732. (Model.)

To all whom it may concern:

Be it known that I, FRED W. CRANDALL, a citizen of the United States, residing at Montrose, in the county of Susquehanna and State of Pennsylvania, have invented a new and useful Improvement in Toy Spring-Guns, of which the following is a specification.

My invention relates to toy guns, and more particularly to the construction and adjustment of that class of toy guns known as the "rubber gun" or that kind of a toy gun which derives its propulsive power from the contractility of a rubber strap, band, or cord.

The construction and adjustment of toy guns with rubber as a propulsive force have heretofore been such that from the strain and friction on the rubber strap, band, or cord it soon becomes worthless, and by the abrupt suspension of the contractile force of the rubber at some particular point on the gun the tendency has been to injure and destroy the gun after a short use.

In the projector of toy guns formerly manufactured the muzzle of the projector has been left open because the shot, peas, or other missiles desired to be thrown or shot have to be poured into the projector through the muzzle, and then it is impossible for the operator to make a shot on a downward angle, because the load will roll out of the projector. The shot has always to be made on a level or slight upward angle.

My object is to do away entirely with the friction on the rubber, the abrupt suspension of the contractile force of the rubber, the loading of the projector through the muzzle, and the consequent impossibility to make a shot except on a level or slight upward angle. All these objections are overcome in the construction of my gun, as shown herein.

In order that my invention may be fully understood, I will proceed to describe it, with reference to the accompanying drawings, in which—

Figure I is a side view of my improved toy spring-gun, the stock and barrel being sectioned at the trigger portion; and Fig. II is a plan view of the same. Fig. III is a longitudinal sectional view of the projector.

The stock 1 and barrel 2 of my improved gun may be of any usual construction. The barrel is provided with a groove, 3, in its upper surface in depth sufficient to engage the projector 4 and to direct the projectile placed therein. The projector is hollow for about one-half of its length, as shown at 5, so as to receive the peas, shot, or other missiles, or to receive and support the stem of an arrow. Over the muzzle of the projector is placed a valve, 6, of any suitable material, preferably rubber, so that the projectile may be retained within the projector, whatever angle the latter is held in, and may thus be thrown from the gun in a straight line with the groove.

The projector 4 may be of any shape to work freely in the groove of the barrel. It is preferably provided with a transverse aperture, 7, to engage and retain the contractile rubber springs or cords 8 9. It also has a circumferential groove or shoulder, 10, whose lower side is faced with a metal piece, 11, adapted to engage the hooked end 12 of the trigger 13. A hole, 14, is provided in the top of the projector 4, communicating with the hollow within the projector. Through this hole the peas or other missiles which it is desired to shoot may be passed for loading the gun. When in the projector, they are held in by valve 6, as already described.

The trigger 13 is pivoted at 15 to the barrel of the gun, and is pressed up so as to engage automatically with the wear-plate 11 by a spiral or other spring, 16, placed under the horizontal arm thereof.

I do away entirely with all stops, pins, screw-eyes, or other projections from the sides, top, or bottom of the barrel, and overcome all objectionable friction of the rubber and the jar or shock when the propulsive force is suddenly stopped by attaching to the projector 4, in addition to the main rubber spring 8, fixed to the barrel forward of the normal position of the projector when at rest, a second rubber cord, strap, or band, 9, of less contractile force than the spring 8. The ends of this cord, strap, or band are fixed to the under surface of the barrel or stock, as may be preferable, and some little distance, preferably about eight inches, in the rear of the point of attachment of the main rubber cord or band 8. The two bands, however, both that projecting forward and that projecting

rearward of the projector 4, pass through the same aperture or are attached at about the same point on said projector. It is apparent that these springs may be of rubber or other suitable elastic material, and that the other parts of the gun may be altered in form without departing from the spirit of my invention. It may, for example, be made with single or double barrels, as preferred.

I am aware that projectors or drivers for following the groove made for arrows or other missiles have been used in connection with toy guns previous to this, but not in the manner herein described. They have been held in the groove by means of slots and pins or dovetail arrangements, necessitating other grooves or mortises than the arrow-groove, and have been held in the groove by passing the driving-cord or rubber spring through screw-eyes around pins, or around or under rollers or pulleys projecting from the sides or from the under surface of the stock or barrel, and the projector or driver is gradually brought to a a stop by the cord which propels it. Consequently the effect of their operation is not the same, and the projectors or drivers must come to a stop when reaching the ends of the grooves, or when the propelling-cord comes directly in contact with the screw-eyes, pins, or other projections. It is not so with my gun. The projector is free to run back and forth in the groove, entirely independent of all other grooves, stops, pins, or projections, and the recoil of the projector from the muzzle of the barrel to its normal position produces no jar or strain, the lesser or rear contractile rubber spring first giving momentum to the projector, whereby the projectile is thrown farther and with greater force than by any other spring-gun known to me, and then controlling, regulating, and adjusting the projector after it has received and exhausted the full force of the greater or front contractile rubber spring.

I am aware that a toy spring-gun is shown in United States Letters Patent No. 267,679, dated November 21, 1882, and No. 313,413, dated March 3, 1885, and I claim nothing as therein shown.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a toy spring-gun, the combination of a barrel, a projector adapted to carry a missile and guided on said barrel, and springs attached to the barrel or stock at different points and connected with said projector so as to hold the latter normally between said points of attachment, substantially as set forth.

2. In a toy spring-gun, in combination with a barrel and a projector adapted to carry a missile and guided on said barrel, springs of different contractile power fixed each at one end to the said projector and at the other end to different points on the barrel or stock, substantially as set forth.

3. In a toy spring-gun, in combination with a barrel, a projector guided on said barrel, contractile springs connected to the said projector at one end and to different points on the barrel or stock at the other end, a notch or shoulder on said projector, and a spring-trigger pivoted to said barrel and having a hooked end or nose for engaging with said notch or shoulder on said projector, substantially as set forth.

4. In a toy spring-gun, the combination of a barrel, a projector guided on said barrel, and a pair of separate springs, each connected at one end to the projector and at the other to the barrel, the points of attachment to the barrel being at such distances asunder that the projector will be held normally between them, as set forth.

FRED W. CRANDALL.

Witnesses:
B. J. CRANDALL,
B. L. BALDWIN.