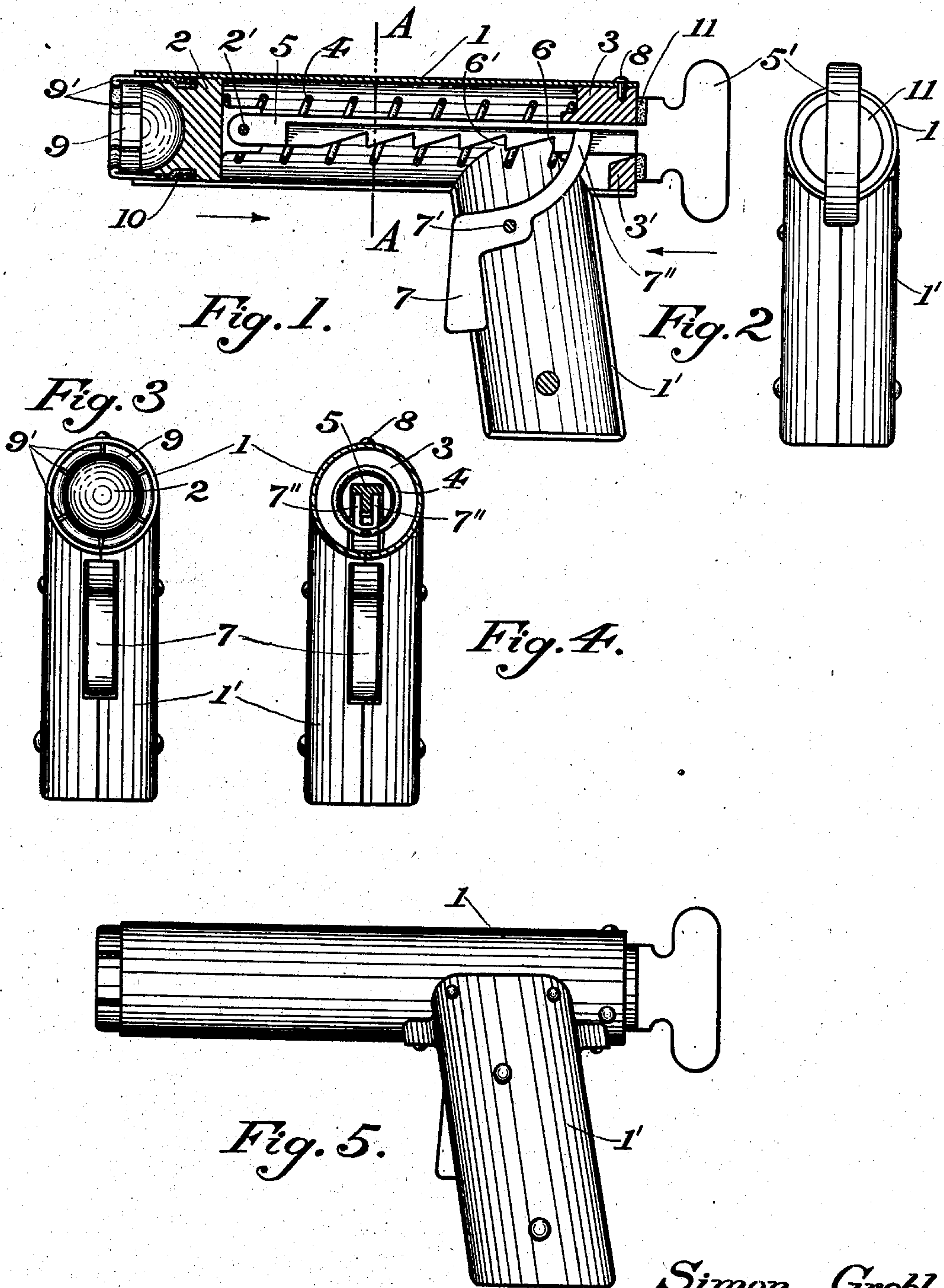


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TOY.

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Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## TOY.

No. 899,448.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed December 9, 1907. Serial No. 405,640.

*To all whom it may concern:*

Be it known that I, SIMON GROBL, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Toys, of which the following is a specification.

My invention pertains to toys of the air gun or spring gun type, and has as its object the production of a device of simple mechanism, an improved missile carrier and a device which may be set to varying degrees of tension preparatory to discharge of the missile.

In the missile carrier of my device I provide means for retaining the missile in the carrier until the carrier has reached its extreme position, when the missile is permitted to leave the carrier. I provide a series of teeth in the means for holding the missile carrier under tension whereby, by choosing the tooth, a desired tension may be chosen for the propulsion of the missile.

In the drawings Figure 1 shows longitudinal section of the spring gun of my invention; Fig. 2 shows elevation of the adjacent end of Fig. 1; Fig. 3 shows elevation from the opposite direction; Fig. 4 shows section and elevation on the line A A of Fig. 1 looking in the same direction as the elevation of Fig. 3; Fig. 5 shows an alternative construction.

The frame of the spring gun comprises a barrel 1 and a handle 1', which I prefer to make of a single piece of metal as shown in Figs. 1—2—3—4, but it may be made of two pieces as shown in Fig. 5 if so desired. The barrel 1 is substantially cylindrical and serves as a guide for the missile carrier 2 which normally rests at the front end of the barrel as shown in Fig. 1. A breech block 3 closes the alternative end of the barrel and the spiral compression spring 4 presses the missile carrier away from the breech block. An operating bar 5 is pivotally attached to the carrier and passes through the breech block 3, terminating in the shouldered handle 5' which by its shoulders is adapted to engage the breech block 3, the leather washer 11 being placed between the parts as shown to reduce the noise and to reduce the shock of impact. By the engagement of the shouldered handle 5' with the breech block 3, the forward movement of the carrier 2 is limited. Upon the edge of the operating arm 5 are a series of teeth 6 6', etc. and the rearward edge of the breech block 3 is cut at 3' to form

a fixed tooth over which the teeth 6 6' etc. pass as the carrier 2 is drawn back by means of the operating bar 5 and handle 5'. When the desired tension is reached the operating bar 5 is swung upon its pivot 2' that the fixed tooth 3' may be engaged by the then nearest tooth 6 6' etc., and the carrier 2 thus is held retracted until the parts are disengaged.

I provide a trigger 7 pivoted at 7' in the handle. By reference to Fig. 4 it will be seen that cross section of the operating bar 5 is of such shape as to provide a continuous rib, free from teeth, for the engaging ends of the handle of the trigger 7. In the drawing the trigger 7 is bifurcated and extends in prongs 7'' 7'' to engage the continuous ribs or sliding surfaces of the operating bar 5. This trigger is such in construction that when pulled in the direction usual in fire arms it operates to lift the operating bar 5 away from the fixed tooth 3' while the carrier is propelled to its normal extended position under the power of the spring 4.

In assembling the operating bar 5 is passed through the breech block 3 and through the spring 4 and then is attached to the carrier 2. The parts thus assembled are passed in the barrel from the rear, and the breech block is rigidly fixed by a rivet, screw or drive pin, as 8. The trigger 7 then is inserted in the handle and the pivot pin 7' is passed through, completing the assembling of the device.

The missile carrier consists of a metal casting 2 and a leather washer 9, the washer 9 being wrapped around the casting 2 and bound by threads 10. The washer 9 has its forward or free edge thickened by crimping or by other process of manufacture, such as the use of a thick piece of leather cut down to thinner section at points other than the forward edge. The object of the thickened forward edge is to retain a missile in the carrier when the carrier is wholly within the barrel of the spring gun. The carrier is designed to carry a missile larger than the opening afforded within the thickened edges of the washer 9 and not larger than the clearance of the thinner portions of the washer 9. The washer 9 is slotted longitudinally, several slots being made as shown at 9' of Fig. 3.

A missile is inserted in the carrier by forcing it past the thickened edges of the washer 9 while those edges project beyond the barrel 1 as shown in Fig. 1. With the carrier in



this position the several leaves of the washer 9 yield readily to pressure and permit the missile to pass into its seat on the casting 2.

When the carrier is drawn into the barrel by the operating bar 5, it is impossible for the missile to be removed from the carrier because of the thickened edge of the washer 9. When the carrier is released and travels forward to its furthest extension, the impetus of the missile propels it beyond the carrier, the forward edges of the leaves of washer 9 being then free to yield to permit the missile to pass beyond the outside of the barrel 1.

It is desirable that the moving parts of the spring gun of my invention be as light as possible, but within certain limitations there exists a considerable latitude of choice. The carrier 2 I have shown solid and may be cast solid in aluminum or may be turned of wood, although it is possible also to press or spin it from sheet metal and obtain a light yet sufficiently rigid construction. The operating bar 5 may be of aluminum to secure minimum weight and the teeth 6 6' etc. may be integral with the aluminum bar or may be of steel inserted in the bar.

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

1. In a spring gun, a gun barrel; a missile carrier comprising a frame and a missile retaining washer, said carrier being movable within the barrel of said gun, said missile retaining washer normally projecting from the barrel of the gun and yielding for insertion or ejection of a missile when projecting from the barrel of the gun and said washer being restrained by the barrel of the gun to retain the missile when the carrier and washer are wholly within the gun barrel, substantially as described.

2. In a spring gun, a missile carrier; a missile retaining washer on said missile carrier and projecting in front of said carrier and lying within the barrel of the gun when the carrier is retracted preparatory to discharge of the missile, the forwardly projecting lip of said washer being thickened, said washer being longitudinally slotted in its forward position and projecting its forward portion beyond the end of the gun barrel when the carrier is in its extreme forward extension, the thickened edge of said washer being confined by the gun barrel when the carrier is wholly within the barrel, and said thickened edge being adapted to retain the missile when so confined, substantially as described.

3. In a spring gun, a missile carrier having a missile retaining edge in advance of the missile, said edge being elastic and movable out of the way of the missile when projecting beyond the barrel of the gun and said missile retaining edge lying within the gun barrel and being restrained by the gun barrel to retain the missile when the carrier is drawn wholly into the barrel, substantially as described.

4. In a spring gun, a missile carrier having a missile retaining edge in advance of the missile, said edge being elastic and longitudinally slotted and movable out of the way of the missile when projecting beyond the barrel of the gun and said missile retaining edge lying within the gun barrel and being restrained by the gun barrel to retain the missile when the carrier is drawn wholly into the barrel, substantially as described.

5. In a spring gun, a missile carrier having a forward edge projecting beyond the missile, said forward edge being restrained by the gun barrel when the missile carrier is wholly within the gun barrel and presenting a clearance smaller than the missile, substantially as described.

6. In a spring gun, a spring-pressed missile carrier; a toothed operating bar adapted to restrain said carrier under tension of its spring; a fixed detent with which the teeth of said operating bar may engage; a trigger engaging said operating bar and adapted to disengage said bar from said detent; a smooth track on said operating bar for sliding contact with said trigger, whereby said bar may move when disengaged from said detent, said smooth track and the teeth of said operating bar occupying the same lineal space along the bar, substantially as described.

7. In a spring gun, an operating bar of T cross-section; a detent for said bar; teeth on that edge of the bar forming the foot of the cross-section T to engage the detent; a trigger having a bifurcated end spanning the stem of the T and engaging the leaves of the operating bar forming the arms of the cross-section T and adapted to lift the operating bar from the detent, substantially as described.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

SIMON GROBL.

Witnesses:

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