April 1, 1924. 1,488,995

E. P. McCOLLOM

TOY GUN

Filed June 28, 1922

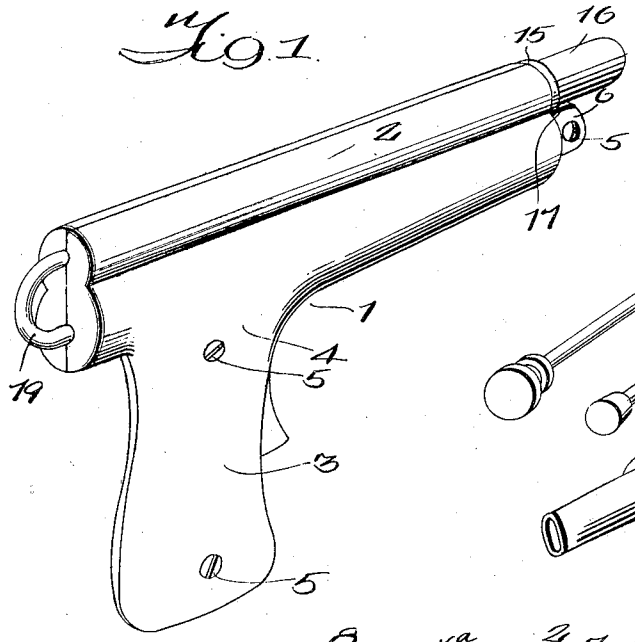


Fig. 1.

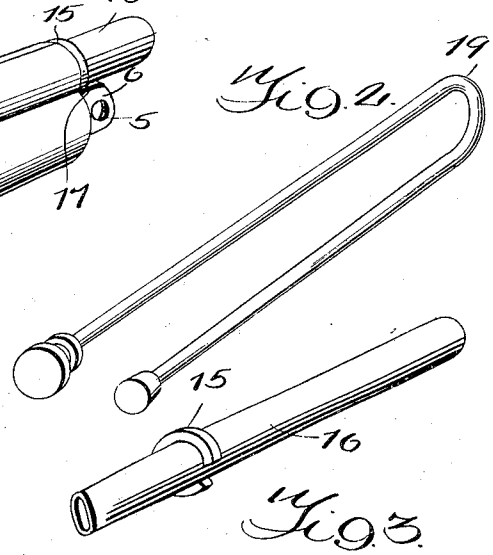


Fig. 2.

Fig. 3.

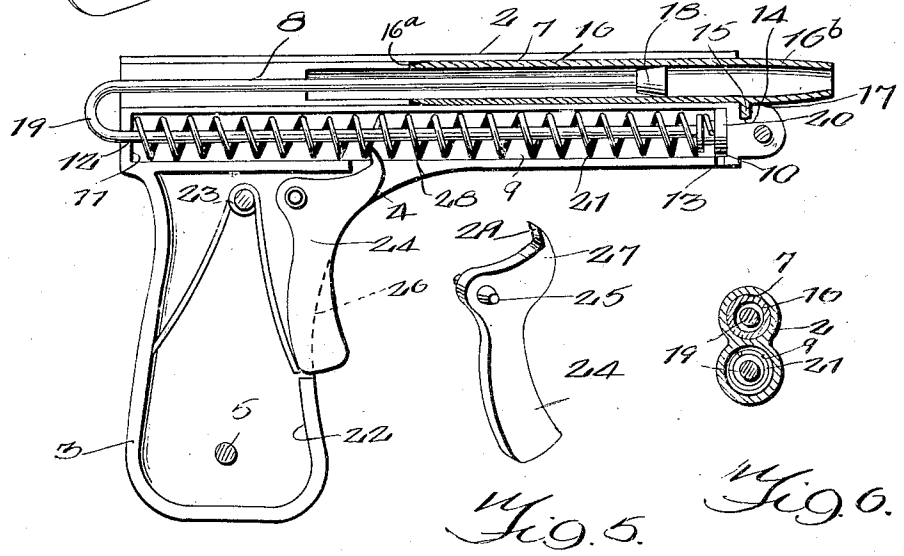


Fig. 4.

Fig. 5.

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

EDWIN P. McCOLLOM, OF BALTIMORE, MARYLAND.

TOY GUN.

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To all whom it may concern:

Be it known that I, EDWIN P. McCOLLOM, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Toy Guns, of which the following is a specification.

My invention is a toy gun of that type of construction in which a spring actuated plunger is provided to effect the ejection of a missile or projectile from the barrel of the gun, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device of the character described which is simple and novel in construction, easy to operate and capable of being manufactured cheaply, and which is thoroughly practical commercially.

A further object of my invention is to provide a device of the character described which includes a removably held tube or working barrel adapted to co-act with a plunger comprised in the device to occasion the ejection of a projectile engaging the tube upon a forward movement of the plunger whereby the tube can be readily replaced at a slight cost when worn or otherwise impaired, and the device thus maintained in condition for service for a relatively long time for a device of the character described.

Other objects and advantages will be apparent from the following description and the novel features of the invention will be particularly outlined in the appended claims.

My invention is illustrated in the accompanying drawings, forming a part of this application, in which,

Figure 1 is a perspective view of a toy gun embodying the invention,

Figure 2 is a perspective view of a plunger unit comprised in the device,

Figure 3 is a similar view of a tube or working barrel comprised in the device,

Figure 4 is a central longitudinal vertical section through the device,

Figure 5 is a perspective view of a trigger element comprised in the device, and

Figure 6 is a transverse section through the barrel portion of the device.

In carrying out my invention, I provide a pistol-shaped body indicated generally at 1 which comprises a barrel portion 2, a grip or handle portion 3 and an intermediate or stock portion 4 merging the barrel and the grip or handle one into the other.

The body 1 may be made in any suitable known manner of any suitable material, as of wood or by casting of metal, and is preferably formed of two symmetrical half or complementary sections detachably secured together by screws 5 or like fastening elements. The barrel portions of the complementary sections of the body are shown as being provided with cooperating lug or ear extensions 6—6 at the forward ends thereof, which lug or ear extensions have alined openings formed therethrough for the reception of one of the fastening elements 5.

With the organization described, the sections of the body may be secured firmly together to prevent relative movement or play between the sections while access to the interior of the body is possible for adjusting or replacing any of the parts of the device which are disposed therein and which will now be described.

The sections of the body are formed with cooperating recesses in the confronting faces of the barrel and stock portions of the body to provide a bore 7 extending from a point in the stock portion longitudinally of the barrel through the muzzle end of the latter, a bore 8 of relatively reduced diameter which is axially alined and in communication with the bore 7 and extends from the rearward end of the latter through the stock 4, and a bore or longitudinal chamber 9 which extends in the stock and barrel in parallel spaced relation to the alined bores 7—8 from a point adjacent to the rearward end of the stock 4 to a point adjacent to the forward or muzzle end of the barrel. The bore or chamber 9 is located below the bores 7—8 in the embodiment of the invention illustrated. The bore or chamber 9 is closed at its forward end as indicated at 10 and is provided at its rearward end with an annular shoulder 11 merging it into a relatively reduced bore 12 which is axially alined therewith and extends through the rearward end of the stock 4. A lateral orifice through the walls of the bore 9 at the forward end of the latter serves as an air vent as will presently appear.

The lug or ear extensions 6—6 have their rearward portions cut away to define in conjunction with the proximate walls of the body a transverse slot 14 adapted to receive a locking rib or projection 15 which ex-

tends circumferentially on a tube or working barrel 16 part of the distance around the latter, the tube 16 being insertable in the bore 7 and the ends of the locking rib or projection terminating short of each other to define an opening through which the lugs 6—6 may extend when the tube is being inserted in the bore 7.

The lugs or ears 6—6 are fashioned to provide in the upper side of the secured together lugs a longitudinally extending groove 17 of arcuate cross sectional contour in which the tube 16 may be slid when being inserted in the bore 7. The lugs or ears 6—6 thus guide the tube 16 into the bore 7 and serve to support the muzzle end of the tube or working barrel 16 when the latter is in adjusted position in the bore 7.

The locking rib 15 is adapted for at least part of its length to frictionally engage the side walls of the slot 14, as by being formed to taper in width from one end to the other, whereby the working barrel or tube 16 may be adjusted in the bore 7 to be releasably held substantially rigid with the barrel portion of the body 1.

The tube 16 is formed with a sharp edge 16^a at the rear end thereof and the walls of the tube converge slightly from a short distance from the forward end thereof to the muzzle end of the tube as indicated at 16^b for a purpose which will presently appear. A plunger unit for effecting the ejection of the projectile comprises a plunger head 18 adapted to reciprocate in tube 16, a substantially U-shaped plunger stem 19 having one arm connected at its extremity to the plunger head 18 and extending rearwardly in the bore 7 and slidable through the bore 8 beyond the rearward end of the stock where it is merged by the bend or half loop portion of the plunger stem into the second arm of the latter, which second arm extends slidably through the bore 12 into the bore 9, and is of slightly greater length than the first arm, and a disk 20 secured to the forward end of the second named arm of the U-shaped plunger stem and being adapted to reciprocate in the bore 9.

An expansion spring 21 is coiled about the second named arm of the plunger stem within the bore 9 and re-acts at one end against the disk 20 and at the other end against the shoulder 11, thereby tending to hold the disk 20 at the forward end of the bore 9 against the end 10 thereof.

A cavity 22 is formed in the grip or handle portion of the body for the reception of a spring 23 having an intermediate portion wound about one of the fastening elements 5 and diverging arms, one of which re-acts at its outer end against the rear wall of the cavity 22 while the other arm re-acts at its extremity against the lower portion of a trigger 24 which is pivotally supported adjacent to its upper end in the cavity 22, as by means of alined trunnions 25—25 extending from the opposite sides thereof and being received within sockets in the side walls of the cavity 22. The action of the spring 23 tends to hold the trigger 24 with the lower portion thereof protruding partially from the cavity 22 through an aperture 26 in the forward side of the grip or handle portion of the body.

The trigger 24 has a forwardly and upwardly extending portion 27 at its upper end adapted to extend through an aperture 28 through the walls of the lower part of the bore 9 into the latter at a point nearer to the rearward than to the forward end thereof. The extension 27 tapers to a relatively sharp edge at its upper end as indicated at 29, the upper edge portion thereof being turned slightly rearwardly and thus adapted to engage the disk 20 at the front side of the latter and to permit of the convolutions of the spring 21 and the disk 20 riding over the upper end of the extension 27 and depressing the latter when moved rearwardly in the bore 9.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The device may be employed to effect ejection of a projectile, such as a cork, placed in the muzzle end of the tube or working barrel 16 and to this end the plunger head 18 may have a substantially fluid-tight fit with the tube, while reciprocating in the latter. Air between the plunger head and the projectile in the muzzle end of the tube 16 will thus be compressed upon forward movement of the plunger head and the projectile will be ejected with a loud report.

However, it is intended that a closure shall be placed in each end of the tube 16 before the latter is inserted into the bore of the barrel portion of the body. Any suitable material may be used as a source from which the closure may be cut and placed in the tube in a single operation. For instance, I may make use of a readily available source of closure forming supply, such as potatoes or like articles, which I cut into slices of a desirable thickness and by placing the sharp edged end of the tube upon a slice, may cut from the latter a closure which will be placed in the one end of the tube when the latter is forced through the slice. The closure in the one end of the tube is then forced through the tube by any suitable means into the rearward portion of the tapered muzzle end of the tube and a second closure is placed in the tube in the position vacated by the first closure. The tube is then placed in the bore of the barrel portion of the body, which is a holder for the tube. The substantially U-shaped plunger stem is then retracted against the action of the spring 21 until

the disk 20 is engaged by the projections of the trigger extension 27, whereby the plunger stem will be held in retracted position. Pressure upon the trigger 24 will depress the extension 27 thereto, releasing the plunger stem and permitting the spring 21 to act and cause a rapid forward movement of the plunger unit. The plunger head 18 forces the closure in the rearward end of the tube forwardly within the tube and the air in the space between the two closures in the tube is compressed until the pressure against the closure in the forward end of the tube is sufficiently high to cause the ejection of the latter with a loud report. The tube 16 is then removed from the barrel portion of the body and will be reloaded when a closure is placed in the rearward end thereof in the manner described. Any suitable material, the particles of which cohere to one another, may be used as a source from which closures for the tube are formed.

The tube 16 may be inserted between the bend portion of the substantially U-shaped plunger stem and the stock portion of the body to provide a handle which may be conveniently grasped in effecting the retraction of the plunger unit against the action of the spring 21. The vent 13 permits the escape of air from the bore 9 which would otherwise tend to retard the forward movement of the disk 20 therein. The projection 17 serves not only to engage the notch or slot 15 to hold the tube or working barrel in the bore 7 but provides a forward sight for the gun.

The tube 16 can be readily replaced at a slight cost when worn or otherwise impaired. Other missiles or projectiles than those having an air-tight fit with the tube may be ejected by impact of the plunger head.

Obviously, my invention is susceptible of embodiment in forms other than that illustrated in the accompanying drawings and I therefore consider as my own all modifications and adaptations thereof which fairly fall within the scope of the appended claims.

What I claim is:

1. In a device of the character described, a body having a barrel portion provided with a longitudinal bore and with guide means extending forwardly of the barrel from the lower side of the bore, said guide means having a transverse slot provided in the upper side thereof, and a tube insertable in the muzzle end of the bore and having a locking rib extending circumferentially thereof and adapted to engage with the slot of the guide means to releasably hold the tube substantially rigid with the barrel portion of of the body when the tube is in adjusted position in respect to the latter.

2. In a device of the character described, a body having a barrel portion provided with two parallel longitudinal bores, one being open at the forward end of the barrel and both having relatively reduced openings extending through the rear wall of the body, a working barrel having a tapering portion at one end and a cutting edge at the other end, said working barrel being insertable into the said one bore of the first barrel, said body and said working barrel being provided with cooperative means for releasably holding the working barrel against displacement from inserted position in the bore of the first barrel, a substantially U-shaped plunger stem having the bend thereof disposed at the rear of the body and arms extending into the respective bores, a reciprocating plunger head disposed within the working barrel when the latter is in inserted position and being secured to the end of one of the arms of the plunger stem, a disk carried at the end of the other arm of the plunger stem and being disposed within the second bore, and spring means within the last named bore and re-acting against the disk to urge the plunger stem forwardly in respect to the barrel.

EDWIN P. McCOLLOM.